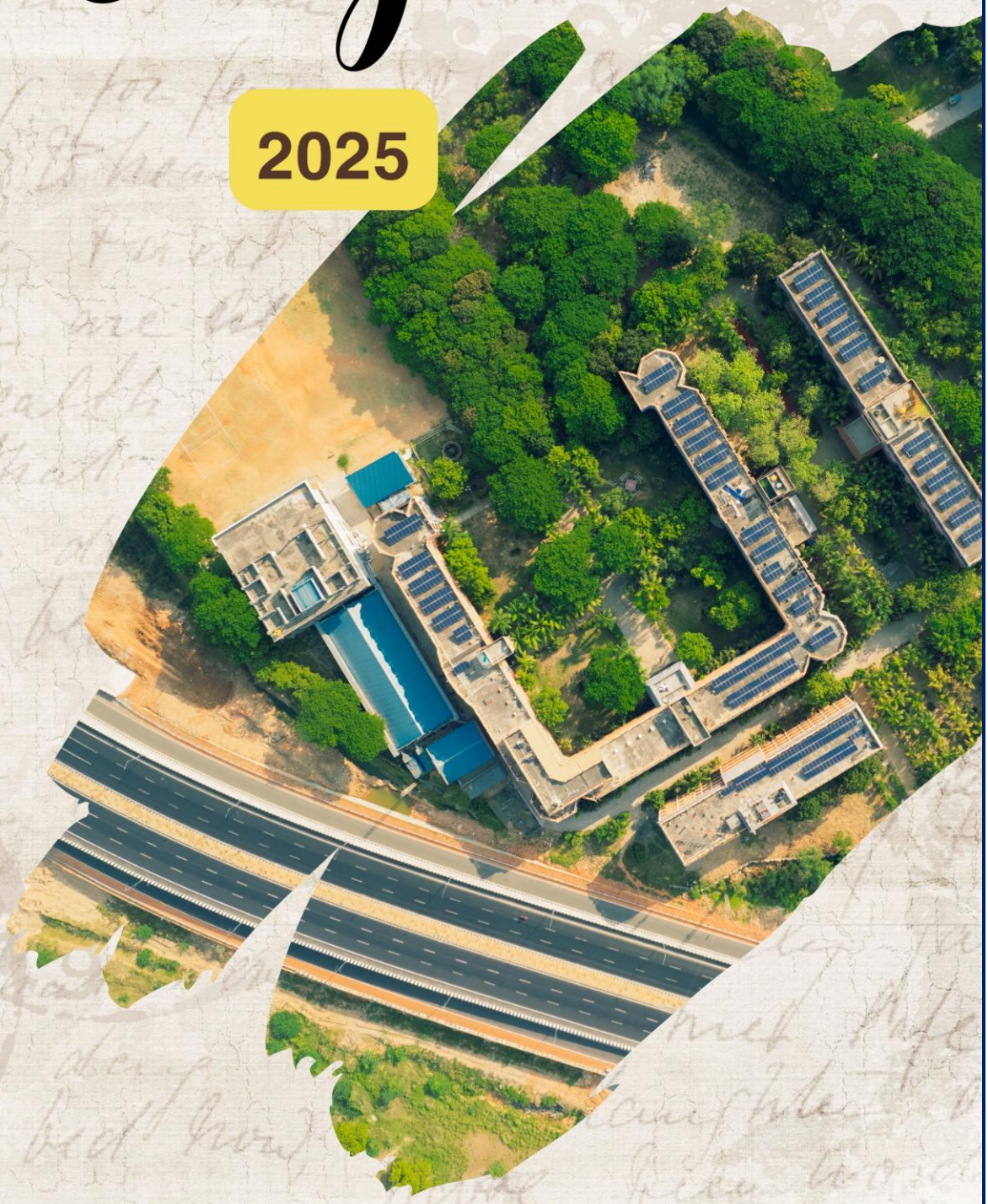
Curriculum & Syllabi

2025



Audisankara (Deemed to be University)

AUDISANKARA

(Deemed to be University)

Recognised under Section 3 of the UGC Act, 1956.

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Audisankara Deemed to be university

Motto: Learn. Create. Lead

VISION

To emerge as a centre of academic distinction that nurtures innovation, cultivates research, and prepares graduates to excel as competent and ethical contributors in a rapidly evolving global society.

MISSION

M1. Academic Excellence & Multidisciplinary Learning

To offer contemporary, flexible, and multidisciplinary programs enriched with strong scientific and technological foundations, fostering intellectual curiosity, critical thinking, and a passion for lifelong learning.

M2. Industry Engagement & Experiential Education

To build strong and purposeful collaborations with industry, enabling students to engage in industrial schooling, internships, live projects, and innovation-driven practice that enhances real-world competence and employability.

M3. Research, Innovation & Global Collaboration

To promote impactful research, foster a culture of innovation, and establish Centres of Excellence and partnerships with leading national and international institutions, thereby advancing knowledge that benefits society and drives technological progress.

OBJECTIVES

1. To provide robust academic programs that integrate scientific, technological, and multidisciplinary learning, ensuring strong conceptual understanding and professional competence.
2. To promote industry-relevant exposure through internships, industrial training, collaborative projects, and skill-based training that enhances employability and practical problem-solving abilities.
3. To advance research and innovation by establishing Centres of Excellence, encouraging faculty-student research activities, and creating platforms for transformative ideas and technological solutions.
4. To build national and international collaborations that expand learning opportunities, enrich academic quality, and support joint research and developmental initiatives.
5. To nurture values, ethics, and leadership qualities among students, preparing them to contribute responsibly and effectively to society and the global workforce.
6. To create a supportive academic and administrative environment that fosters creativity, encourages new ideas, and ensures efficient implementation of academic innovations.

Parameter	Curriculum Structure
Program Duration	4 Years (8 Semesters)
Total Credits	160
Credits per Semester	20
Credit Definition	**1 Credit = 15 Lecture Hours / 30 Practical Hours / 30 Skill Hours**
NCrF Levels	Level 4.5 (Sem. 1–2), Level 5 (Sem. 3–4), Level 5.5 (Sem. 5–6), Level 6 (Sem. 7–8)
ABC Integration	Mandatory
Entry-Exit Validity	7 Years

Semester	NCrF Level	Skill Type
I	4.5	Basic Skills
II	4.5	
III	5	Intermediate
IV	5	Advanced
V	5.5	
VI	5.5	
VII	6	Professional
VIII	6	

ASSESSMENT REFORMS (NEP)

Component	Weightage
Continuous Assessment	40%
End Semester Exam	60%
Project-Based Evaluation	Mandatory

Artificial Intelligence and Data Science

Vision

To be a premier hub for intelligent systems and data-centric technologies, empowering graduates to build autonomous solutions, advance computational intelligence, and contribute to sustainable and inclusive societal transformation.

Mission

M1: Knowledge in Intelligent Computing

To equip learners with strong foundations in intelligent algorithms, probabilistic models, and computational frameworks required to design adaptive and autonomous systems.

M2: Applied Intelligence and Innovation

To encourage experiential learning through real-time applications, interdisciplinary projects, and partnerships that promote the development of intelligent solutions for complex environments.

M3: Responsible and Adaptive Professionals

To cultivate professionals with ethical awareness, collaborative mindset, and continuous learning abilities to navigate dynamic technological ecosystems.

Program Educational Objectives (PEOs)

PEO1: Intelligent Solution Development

Graduates will design and deploy intelligent solutions using artificial intelligence techniques to address complex challenges across diverse domains.

PEO2: Technological Growth and Exploration

Graduates will explore emerging paradigms in intelligent systems, demonstrating adaptability and contributing to advancements in research or professional practice.

PEO3: Ethical and Societal Contribution

Graduates will uphold professional integrity, work in collaborative environments, and contribute responsibly to societal development through technology.

Program Outcomes (POs)

PO1: Engineering Knowledge Apply knowledge of mathematics, natural science, computing, and engineering fundamentals appropriate to the discipline to the solution of **complex engineering problems**.

PO2: Problem Analysis Identify, formulate, research literature, and analyse **complex engineering problems** reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/Development of Solutions Design solutions for **complex engineering problems** and design systems, components, or processes that meet specified needs with appropriate consideration for **public health and safety, whole-life cost, net zero carbon, culture, society, and environment**.

PO4: Investigation Conduct investigations of **complex engineering problems** using research-based knowledge and methods, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5: Modern Tool Usage Create, select, and apply appropriate techniques, resources, and **modern engineering and IT tools**, including prediction and modelling, to complex engineering problems, with an understanding of their limitations.

PO6: The Engineer and the World Analyse and evaluate **sustainable development impacts** to society, the economy, sustainability, health and safety, legal frameworks, and the environment in solving complex engineering problems.

PO7: Ethics Apply ethical principles and commit to professional ethics, responsibilities, and norms of engineering practice, including compliance with **national and international laws**. Demonstrate an understanding of the need for **diversity and inclusion**.

PO8: Individual and Collaborative Team Work Function effectively as an individual, and as a member or leader in **diverse and inclusive teams and in multidisciplinary, face-to-face, remote, and distributed settings**.

PO9: Communication Communicate effectively and inclusively on **complex engineering activities** with the engineering community and with society at large, including being able to comprehend and write effective reports and design documentation, and give and receive clear instructions.

PO10: Project Management and Finance Apply knowledge and understanding of engineering management principles and economic decision-making, and apply these to one's own work, as a member and leader in a team, to manage projects in **multidisciplinary environments**.

PO11: Life-long Learning **Recognise the need for, and have the preparation and ability for** independent and life-long learning**, adaptability to new and emerging technologies, and critical thinking in the broadest context of technological change.**

Program Specific Outcomes (PSOs)

PSO1: Intelligent Modelling
Model complex problems using machine learning, deep learning, and probabilistic approaches to enable predictive and adaptive solutions.

PSO2: Autonomous Systems
Construct intelligent applications and autonomous systems using AI frameworks, neural networks, and data-driven architectures.

PSO3: Insightful Decision Systems
Interpret analytical results to support informed decision-making while considering ethical, legal, and societal implications.

Correlation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
PEO1	3	3	3	2	3	1	–	–	–	–	2	3	2	2
PEO2	2	2	3	3	3	–	–	–	–	–	3	2	3	2
PEO3	–	–	1	–	1	3	3	3	2	2	3	1	1	3

CURRICULUM

Artificial Intelligence and Data Science

	Course Code	Course Title	Category	L	T	P	C
SEMESTER I	25MA101	Linear Algebra, Calculus and Differential Equations	BSC 01	3	1	0	4
	25CH101	Engineering Chemistry	BSC 04	2	0	2	3
	25UC101	Programming for Problem Solving using C	ESC 01	3	0	2	4
	25HS101	English	HSS 01	2	0	2	3
	25UC103	Design Thinking and Idea Lab	ESC 03	2	0	2	3
	25CS101	Digital Logic Circuits	PCC 01	3	0	0	3
	-	Induction Programme (Non-credit)	MC 01	0	0	0	0
	25CBE01	Consciousness Based Education (CBE) – A1	HSS 02	0	0	0	0
	Total			15	1	8	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER II	25MA201	Integral Transforms and Multivariable Calculus	BSC 03	3	1	0	4
	25PH101	Semiconductor Physics	BSC 02	2	0	2	3
	25UC102	Engineering Systems	ESC 02	2	0	2	3
	25UC105	Sustainable Engineering	ESC 05	1	0	2	2
	25UC104	Engineering Drawing and Computer Graphics	ESC 04	2	0	2	3
	25CS201	Data Structures and Algorithms	PCC 02	3	0	0	3
	25CS202	Data Structures and Algorithms Laboratory	PCC 03	0	0	2	1
	25CBE01	Consciousness Based Education (CBE) – A1	HSS 02	0	0	0	0
	25UC106	Sports & Yoga or NSS/NCC (Audit)	AC 01	0	0	2	0
	25CBE02	Consciousness Based Education (CBE) – A2	HSS 03	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			14	1	12	20/24

Artificial Intelligence and Data Science

	Course Code	Course Title	Category	L	T	P	C
SEMESTER III	25MA303	Discrete Mathematics and Probability	BSC 07	3	1	0	4
	25DS301	Introduction to Data Science	PCC 04	2	0	2	3
	25AD301	Design and Analysis of Algorithms	PCC 05	3	0	0	3
	25CS302	Software Engineering	PCC 06	3	0	0	3
	25CS303	Operating Systems	PCC 07	2	0	2	3
	25CS305	Python for Data Science and Visualisation	SEC 01	0	0	2	1
	25UC107	Environmental Science	AC 02	2	0	0	0
	25UC108	Universal Human Values – II	HSS 04	2	1	0	3
	25CBE03	Consciousness Based Education (CBE) – A3	HSS 05	0	0	0	0
	Total			17	2	6	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER IV	25CS402	Theory of Computation	PCC 08	3	1	0	4
	25AD401	Principles of Artificial Intelligence	PCC 09	3	0	2	4
	25CS401	Computer Organisation and Architecture	PCC 10	3	0	0	3
	25CS403	Java Programming	PCC 11	3	0	0	3
	25UC109	Indian Knowledge System	AC 03	2	0	0	0
	25AD402A 25AD402B 25AD402C 25AD402D	Program Elective Course 1	PEC 01	3	0	0	3
	25AD403	Mini Project I (SDG Focus/ Multi-disciplinary)	PrSI 01	0	0	2	1
	25CBE04	Consciousness Based Education (CBE) – A4	HSS 06	1	0	0	1
	25CS407	Java Programming Laboratory	PCC 12	0	0	2	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	1	6	20/24

Artificial Intelligence and Data Science

	Course Code	Course Title	Category	L	T	P	C
SEMESTER V	25AD501	Introduction to Machine Learning	PCC 13	3	0	0	3
	25CS501	Computer Networks	PCC 14	3	0	2	4
	25AD502 A 25AD502 B 25AD502 C 25AD502 D	Program Elective Course 2	PEC 02	3	0	0	3
	-	Open Elective I	OEC 01	3	0	0	3
	25AI504	Introduction to Quantum Computing (Industry Taught Courses)	SEC 02	2	0	0	2
	25AD504	Machine Learning Lab	PCC 15	0	0	2	1
	25UC110	Professional Ethics	HSS 07	3	0	0	3
	25AD503	Internship I / Industry Training (Summer Term) (2 weeks = 1 credits)[1]	PrSI 02	0	0	2	1
	25CBE05	Consciousness Based Education (CBE) – A5	HSS 08	0	0	0	0
	Total			17	0	6	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VI	25AD601	Data Mining and Data Warehousing	PCC 16	3	0	2	4
	25AD602	Deep Learning	PCC 17	3	0	0	3
	25CS601	Database Management System	PCC 18	3	0	0	3
	-	Open Elective II	OEC 02	3	0	0	3
	25AD602 A 25AD602 B 25AD602 C 25AD602 D	Program Elective Course 3	PEC 03	3	0	0	3
	25UC111	Soft Skills	HSS 09	2	0	2	3
	25AD603	Mini Project II (Industry/Societal Problem)	PrSI 03	0	0	2	1
	25UC112	Scientific Writing, Patents and Intellectual Property	HSS 10	0	0	4	2
	25CBE06	Consciousness Based Education (CBE) – A6	HSS 11	1	0	0	1
	25CS605	Database Management System Laboratory	PCC 19	0	0	2	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	0	12	24/28

[1] Summer Internship in summer vacation (after 4th sem) will be evaluated in 5th sem.

Artificial Intelligence and Data Science

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VII	25AD701	Natural Language Processing	PCC 20	3	0	2	4
	25AD702 A 25AD702 B 25AD702 C 25AD702 D	Program Elective Course 4	PEC 04	3	0	0	3
	25AD703 A 25AD703 B 25AD703 C 25AD703 D	Program Elective Course 5	PEC 05	3	0	0	3
	-	Open Elective III	OEC 03	3	0	0	3
	25AD704	Industry Elective/ Research Elective / Entrepreneurship Elective	PEC 06	3	0	0	3
	25AD705	Colloquium/Seminar	PrSI 04	0	0	4	2
	25AD706	Internship II[2]	PrSI 05	8hrs/day four weeks=2			2
	25AD707	Mini Project III (Design + Prototype)	PrSI 06	0	0	4	2
	Total			15	0	10	22

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VIII	-	MOOC	OEC 04	0	0	0	2
	25AD801	Capstone Project (SDG/Industry Linked/Cross-disciplinary)	PrSI 07	0	0	24	12
	Total			0	0	24	14

[2] Students will do summer internship in summer vacation (after 6th sem) and evaluation for the same will be done in 7th semester.

Artificial Intelligence and Data Science

Category	Credits	Percentage of Credits %	Remarks
Humanities, Social Sciences & Management (HSMC)	17	11	Communication Skills, Ethics, Management, CBE
Basic Sciences (BSC)	18	9	Mathematics, Physics, Chemistry, Environmental Science
Engineering Sciences (ESC)	15	34	Programming, Graphics, Workshop, Electronics basics
Professional Core Course (PCC) (Lab Integrated courses - 9)	57	11	Discipline-specific courses
Program Elective (PEC)	18	7	Chosen from within the discipline
Open Electives (OEC)	11	11	Across departments
Project / Internship / Research / Entrepreneurship	21	5	Semester-long major project, internships, or startup work
Skill Enhancement Courses/Value Added Courses	3	11	Employability enhancement
Total	160	100	Fulfils AICTE and NEP 2020 requirements

Multiple Entry and Exit

UG	Program Level	Minimum Credit earned	Exit Equivalence forwarding degree	Entry–Requirement (UG 7 years – Credit Expiry)
UG I yr	5	40	UG - Certificate	1. 12th and JEE (through JoSAA/CSAB)
UG II yr	5	40	UG - Diploma	1. 12th and JEE (through JoSAA/CSAB) 2. 1st year UG- Certificate 3. Screening based on Branch Specific Prerequisite (Written test)
UG III Yr	7	44	B.Sc. Engineering	1. 12th and JEE Qualified 2. 2nd year UG- Diploma Certificate 3. Screening based on Branch. Specific Prerequisite (Written test)

Artificial Intelligence and Data Science

Minors = Additional 18 credits

Minor = Breadth (knowledge from another field).

Curriculum Components (Another field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation from another field	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Honors = Additional 18 credits

Honors = Depth (specialisation in own field).

Curriculum Components (Own field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Civil Engineering

Vision

To be a leader in civil engineering education by developing professionals capable of shaping resilient infrastructure, enhancing environmental stewardship, and supporting sustainable societal development.

Mission

M1: Structural and Environmental Foundations

To build strong competence in structural engineering, geotechnics, transportation, and environmental systems for addressing infrastructure-related challenges with technical precision.

M2: Infrastructure Development and Innovation

To promote practical learning through surveying, design, and construction practices, encouraging innovative approaches to infrastructure planning, resource management, and sustainable development.

M3: Professional Ethics and Societal Commitment

To prepare engineers with integrity, teamwork, and awareness of safety, environmental responsibility, and public welfare in engineering practice.

Program Educational Objectives (PEOs)

PEO1: Infrastructure Practice

Graduates will contribute to planning, design, construction, and maintenance of civil engineering projects across various sectors.

PEO2: Advancement and Specialisation

Graduates will pursue higher studies, research, or professional roles in emerging areas such as smart infrastructure, environmental engineering, and sustainable construction.

PEO3: Responsible Engineering Contribution

Graduates will demonstrate ethical responsibility, teamwork, and commitment to safe and sustainable practices that benefit society.

Program Outcomes (POs)

PO1: Engineering Knowledge Apply knowledge of mathematics, natural science, computing, and engineering fundamentals appropriate to the discipline to the solution of **complex engineering problems**.

PO2: Problem Analysis Identify, formulate, research literature, and analyse **complex engineering problems** reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/Development of Solutions Design solutions for **complex engineering problems** and design systems, components, or processes that meet specified needs with appropriate consideration for **public health and safety, whole-life cost, net zero carbon, culture, society, and environment**.

PO4: Investigation Conduct investigations of **complex engineering problems** using research-based knowledge and methods, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5: Modern Tool Usage Create, select, and apply appropriate techniques, resources, and **modern engineering and IT tools**, including prediction and modelling, to complex engineering problems, with an understanding of their limitations.

PO6: The Engineer and the World Analyse and evaluate **sustainable development impacts** to society, the economy, sustainability, health and safety, legal frameworks, and the environment in solving complex engineering problems.

PO7: Ethics Apply ethical principles and commit to professional ethics, responsibilities, and norms of engineering practice, including compliance with **national and international laws**. Demonstrate an understanding of the need for **diversity and inclusion**.

PO8: Individual and Collaborative Team Work Function effectively as an individual, and as a member or leader in **diverse and inclusive teams and in multidisciplinary, face-to-face, remote, and distributed settings**.

PO9: Communication Communicate effectively and inclusively on **complex engineering activities** with the engineering community and with society at large, including being able to comprehend and write effective reports and design documentation, and give and receive clear instructions.

PO10: Project Management and Finance Apply knowledge and understanding of engineering management principles and economic decision-making, and apply these to one's own work, as a member and leader in a team, to manage projects in **multidisciplinary environments**.

PO11: Life-long Learning **Recognise the need for, and have the preparation and ability for** independent and life-long learning**, adaptability to new and emerging technologies, and critical thinking in the broadest context of technological change.**

Program Specific Outcomes (PSOs)

PSO1: Structural and Geotechnical Analysis

Assess structural and geotechnical systems using engineering principles to ensure safety and stability.

PSO2: Infrastructure Planning and Execution

Plan civil engineering projects incorporating design standards, resource management, and construction methodologies.

PSO3: Sustainable Development Practices

Integrate environmental and sustainability considerations in civil engineering solutions for long-term societal benefit.

Correlation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
PEO1	3	3	3	2	2	2	1	–	–	–	2	3	2	1
PEO2	2	2	3	3	2	2	–	–	–	–	3	2	3	2
PEO3	–	–	1	–	1	3	3	3	2	2	3	1	2	3

CURRICULUM

Civil Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER I	25MA101	Linear Algebra, Calculus and Differential Equations	BSC 01	3	1	0	4
	25PH101	Semiconductor Physics	BSC 02	2	0	2	3
	25UC101	Programming for Problem Solving using C	ESC 01	3	0	2	4
	25UC102	Engineering Systems	ESC 02	2	0	2	3
	25UC104	Engineering Drawing and Computer Graphics	ESC 04	2	0	2	3
	25ME101	Engineering Mechanics	PCC 01	3	0	0	3
	-	Induction Programme (Non-credit)	MC 01	0	0	0	0
	25CBE01	Consciousness Based Education (CBE) – A1	HSS 02	0	0	0	0
	Total			15	1	8	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER II	25MA201	Integral Transforms and Multivariable Calculus	BSC 03	3	1	0	4
	25CH101	Engineering Chemistry	BSC 04	2	0	2	3
	25UC103	Design Thinking and Idea Lab	ESC 03	2	0	2	3
	25UC105	Sustainable Engineering	ESC 05	1	0	2	2
	25HS101	English	HSS 01	2	0	2	3
	25CE201	Surveying	PCC02	3	0	0	3
	25CE202	Surveying Laboratory	PCC03	0	0	2	1
	25UC106	Sports & Yoga or NSS/NCC (Audit)	AC 01	0	0	2	0
	25CBE02	Consciousness Based Education (CBE) – A2	HSS 03	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			14	1	12	20/24

Civil Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER III	25MA303	Transforms and Numerical Methods	BSC 07	3	1	0	4
	25CE301	Strength of Materials	PCC 04	2	0	2	3
	25CE302	Building Materials and Construction	PCC 05	3	0	0	3
	25CE303	Building Planning & Drawing	PCC 06	3	0	0	3
	25CE304	Concrete Technology	PCC 07	2	0	2	3
	25EE305	Basics of Python Programming	SEC 01	0	0	2	1
	25UC107	Environmental Science	AC 02	2	0	0	0
	25UC108	Universal Human Values – II	HSS 04	2	1	0	3
	25CBE03	Consciousness Based Education (CBE) – A3	HSS 05	0	0	0	0
	Total			17	2	6	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER IV	25CE401	Transportation Engineering	PCC 08	3	0	2	4
	25CE402	Fluid Mechanics & Hydraulic Machinery	PCC 09	3	0	2	4
	25CE403	Engineering Geology	PCC 10	3	0	0	3
	25CE404	Structural Analysis	PCC 11	3	0	0	3
	25UC109	Indian Knowledge System	AC 03	2	0	0	0
	25CE405A 25CE405B 25CE405C 25CE405D	Program Elective Course 1	PEC 01	3	0	0	3
	25CE406	Mini Project I (SDG Focus/ Multi-disciplinary)	PrSI 01	0	0	2	1
	25CBE04	Consciousness Based Education (CBE) – A4	HSS 06	1	0	0	1
	25CE407	Auto CAD Laboratory	PCC 12	0	0	2	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	0	8	20/24

Civil Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER V	25CE501	Design of Reinforced Concrete Structures	PCC 13	3	0	0	3
	25CE502	Geotechnical Engineering	PCC 14	3	0	2	4
	25CE503 A 25CE503 B 25CE503 C 25CE503 D	Program Elective Course 2	PEC 02	3	0	0	3
	-	Open Elective I	OEC 01	3	0	0	3
	25AI504	Introduction to Quantum Computing (Industry Taught Courses)	SEC 02	2	0	0	2
	25CE504	STAAD Lab	PCC 15	0	0	2	1
	25UC110	Professional Ethics	HSS 07	3	0	0	3
	25CE505	Internship I / Industry Training (Summer Term) (2 weeks = 1 credits)[3]	PrSI 02	0	0	0	1
	25CBE05	Consciousness Based Education (CBE) – A5	HSS 08	0	0	0	0
	Total			17	0	4	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VI	25CE601	Environmental Engineering	PCC 16	3	0	2	4
	25CE602	Water Resources Engineering	PCC 17	3	0	0	3
	25CE603	Design of Steel Structures	PCC 18	3	0	0	3
	-	Open Elective II	OEC 02	3	0	0	3
	25CE604 A 25CE604 B 25CE604 C 25CE604 D	Program Elective Course 3	PEC 03	3	0	0	3
	25UC111	Soft Skills	HSS 09	2	0	2	3
	25CE605	Mini Project II (Industry/Societal Problem)	PrSI 03	0	0	2	1
	25UC112	Scientific Writing, Patents and Intellectual Property	HSS 10	0	0	4	2
	25CBE06	Consciousness Based Education (CBE) – A6	HSS 11	1	0	0	1
	25CE605	Structural Modelling Laboratory	PCC 19	0	0	2	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	0	12	24/28

[3] Summer Internship in summer vacation (after 4th sem) will be evaluated in 5th sem.

Civil Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VII	25CE701	Estimation, Costing & Valuation	PCC 20	3	0	2	4
	25CE702 A 25CE702 B 25CE702 C 25CE702 D	Program Elective Course 4	PEC 04	3	0	0	3
	25AD703 A 25AD703 B 25AD703 C 25AD703 D	Program Elective Course 5	PEC 05	3	0	0	3
	-	Open Elective III	OEC 03	3	0	0	3
	25CE704	Industry Elective/ Research Elective / Entrepreneurship Elective	PEC 06	3	0	0	3
	25CE705	Colloquium/Seminar	PrSI 04	0	0	4	2
	25CE706	Internship II[4]	PrSI 05	8hrs/day four weeks=2			2
	25CE707	Mini Project III (Design + Prototype)	PrSI 06	0	0	4	2
	Total			15	0	10	22

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VIII	-	MOOC	OEC 04	0	0	0	2
	25CE801	Capstone Project (SDG/Industry Linked/Cross-disciplinary)	PrSI 07	0	0	24	12
	Total			0	0	24	14

[4] Students will do summer internship in summer vacation (after 6th sem) and evaluation for the same will be done in 7th semester.

Civil Engineering

Category	Credits	Percentage of Credits %	Remarks
Humanities, Social Sciences & Management (HSMC)	17	11	Communication Skills, Ethics, Management, CBE
Basic Sciences (BSC)	18	9	Mathematics, Physics, Chemistry, Environmental Science
Engineering Sciences (ESC)	15	34	Programming, Graphics, Workshop, Electronics basics
Professional Core Course (PCC) (Lab Integrated courses - 9)	57	11	Discipline-specific courses
Program Elective (PEC)	18	7	Chosen from within the discipline
Open Electives (OEC)	11	11	Across departments
Project / Internship / Research / Entrepreneurship	21	5	Semester-long major project, internships, or startup work
Skill Enhancement Courses/Value Added Courses	3	11	Employability enhancement
Total	160	100	Fulfils AICTE and NEP 2020 requirements

Multiple Entry and Exit

UG	Program Level	Minimum Credit earned	Exit Equivalence forwarding degree	Entry–Requirement (UG 7 years – Credit Expiry)
UG I yr	5	40	UG - Certificate	1. 12th and JEE (through JoSAA/CSAB)
UG II yr	5	40	UG - Diploma	2. 12th and JEE (through JoSAA/CSAB) 3. 1st year UG- Certificate 4. Screening based on Branch Specific Prerequisite (Written test)
UG III Yr	7	44	B.Sc. Engineering	5. 12th and JEE Qualified 6. 2nd year UG- Diploma Certificate 7. Screening based on Branch. Specific Prerequisite (Written test)

Civil Engineering

Minors = Additional 18 credits

Minor = Breadth (knowledge from another field).

Curriculum Components (Another field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation from another field	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Honors = Additional 18 credits

Honors = Depth (specialisation in own field).

Curriculum Components (Own field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Computer Science and Engineering

Vision

To emerge as a centre of excellence in Computer Science and Engineering by fostering innovation, advancing research, and producing globally competent professionals with strong ethical values to address complex technological and societal challenges.

Mission

M1: Academic Excellence

To deliver high-quality education in computer science and engineering through a contemporary curriculum, fostering strong fundamentals, critical thinking, and proficiency in emerging technologies.

M2: Industry and Research Integration

To promote industry collaboration, experiential learning, research, and innovation, enabling students to develop practical skills and solve real-world problems.

M3: Ethics and Lifelong Learning

To inculcate professional ethics, teamwork, leadership, and a commitment to lifelong learning for responsible contribution to society.

Program Educational Objectives (PEOs)

PEO1: Professional Competence

Graduates will excel in their professional careers or higher education by applying computing knowledge and modern tools to solve complex engineering problems.

PEO2: Innovation and Adaptability

Graduates will demonstrate innovation, research aptitude, and adaptability to emerging technologies, contributing to technological advancements and entrepreneurship.

PEO3: Ethics and Lifelong Learning

Graduates will practice professional ethics, work effectively in teams, and engage in lifelong learning to meet societal and global needs.

Program Outcomes (POs)

PO1: Engineering Knowledge Apply knowledge of mathematics, natural science, computing, and engineering fundamentals appropriate to the discipline to the solution of **complex engineering problems**.

PO2: Problem Analysis Identify, formulate, research literature, and analyse **complex engineering problems** reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/Development of Solutions Design solutions for **complex engineering problems** and design systems, components, or processes that meet specified needs with appropriate consideration for **public health and safety, whole-life cost, net zero carbon, culture, society, and environment**.

PO4: Investigation Conduct investigations of **complex engineering problems** using research-based knowledge and methods, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5: Modern Tool Usage Create, select, and apply appropriate techniques, resources, and **modern engineering and IT tools**, including prediction and modelling, to complex engineering problems, with an understanding of their limitations.

PO6: The Engineer and the World Analyse and evaluate **sustainable development impacts** to society, the economy, sustainability, health and safety, legal frameworks, and the environment in solving complex engineering problems.

PO7: Ethics Apply ethical principles and commit to professional ethics, responsibilities, and norms of engineering practice, including compliance with **national and international laws**. Demonstrate an understanding of the need for **diversity and inclusion**.

PO8: Individual and Collaborative Team Work Function effectively as an individual, and as a member or leader in **diverse and inclusive teams and in multidisciplinary, face-to-face, remote, and distributed settings**.

PO9: Communication Communicate effectively and inclusively on **complex engineering activities** with the engineering community and with society at large, including being able to comprehend and write effective reports and design documentation, and give and receive clear instructions.

PO10: Project Management and Finance Apply knowledge and understanding of engineering management principles and economic decision-making, and apply these to one's own work, as a member and leader in a team, to manage projects in **multidisciplinary environments**.

PO11: Life-long Learning Recognise the need for, and have the preparation and ability for independent and life-long learning, adaptability to new and emerging technologies, and critical thinking in the broadest context of technological change.

Program Specific Outcomes (PSOs)

PSO1: Software and Systems Development

Design efficient software systems using appropriate algorithms, data structures, programming paradigms, and modern development frameworks to solve complex computing problems.

PSO2: Emerging Technologies

Apply advanced computing concepts such as Artificial Intelligence, Machine Learning, Data Science, Cybersecurity, and Cloud Computing to develop intelligent and scalable solutions.

PSO3: Professional Practice and Innovation

Utilize modern tools and research methodologies to develop innovative and sustainable solutions while adhering to professional ethics and societal responsibilities.

Correlation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
PEO1	3	3	3	2	3	–	–	–	–	–	2	3	2	1
PEO2	2	2	3	3	3	–	–	–	–	–	3	2	3	2
PEO3	–	–	–	–	1	3	3	3	3	2	3	–	–	3

CURRICULUM

Computer Science and Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER I	25MA101	Linear Algebra, Calculus and Differential Equations	BSC 01	3	1	0	4
	25CH101	Engineering Chemistry	BSC 04	2	0	2	3
	25UC101	Programming for Problem Solving using C	ESC 01	3	0	2	4
	25HS101	English	HSS 01	2	0	2	3
	25UC103	Design Thinking and Idea Lab	ESC 03	2	0	2	3
	25CS101	Digital Logic Circuits	PCC 01	3	0	0	3
	-	Induction Programme (Non-credit)	MC 01	0	0	0	0
	25CBE01	Consciousness Based Education (CBE) – A1	HSS 02	0	0	0	0
	Total			15	1	8	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER II	25MA201	Integral Transforms and Multivariable Calculus	BSC 03	3	1	0	4
	25PH101	Semiconductor Physics	BSC 02	2	0	2	3
	25UC102	Engineering Systems	ESC 02	2	0	2	3
	25UC105	Sustainable Engineering	ESC 05	1	0	2	2
	25UC104	Engineering Drawing and Computer Graphics	ESC 04	2	0	2	3
	25CS201	Data Structures and Algorithms	PCC 02	3	0	0	3
	25CS202	Data Structures and Algorithms Laboratory	PCC 03	0	0	2	1
	25UC106	Sports & Yoga or NSS/NCC (Audit)	AC 01	0	0	2	0
	25CBE02	Consciousness Based Education (CBE) – A2	HSS 03	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			14	1	12	20/24

Computer Science and Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER III	25MA303	Discrete Mathematics and Probability	BSC 07	3	1	0	4
	25CS301	Object Oriented Programming through C++	PCC 04	2	0	2	3
	25CS302	Software Engineering	PCC 05	3	0	0	3
	25CS303	Operating Systems	PCC 06	2	0	2	3
	25CS304	Microprocessor and Microcontroller	PCC 07	3	0	0	3
	25CS305	Python for Data Science and Visualization	SEC 01	0	0	2	1
	25UC107	Environmental Science	AC 02	2	0	0	0
	25UC108	Universal Human Values – II	HSS 04	2	1	0	3
	25CBE03	Consciousness Based Education (CBE) – A3	HSS 05	0	0	0	0
	Total			17	2	6	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER IV	25CS401	Computer Organization & Architecture	PCC 08	3	0	0	3
	25CS402	Theory of Computation	PCC 09	3	1	0	4
	25CS403	Java Programming	PCC 10	3	0	0	3
	25CS404	Design and Analysis of Algorithm	PCC 11	3	0	2	4
	25UC109	Indian Knowledge System	AC 03	2	0	0	0
	25CS405A 25CS405B 25CS405C 25CS405D	Program Elective Course 1	PEC 01	3	0	0	3
	25CS406	Mini Project I (SDG Focus/ Multi-disciplinary)	PrSI 01	0	0	2	1
	25CBE04	Consciousness Based Education (CBE) – A4	HSS 06	1	0	0	1
	25CS407	Java Programming Laboratory	PCC 12	0	0	2	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	1	6	20/24

Computer Science and Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER V	25CS501	Computer Networks	PCC 13	3	0	0	3
	25CS502	Compiler Design	PCC 14	3	0	2	4
	25CS503A 25CS503B 25CS503C 25CS503D	Program Elective Course 2	PEC 02	3	0	0	3
	-	Open Elective I	OEC 01	3	0	0	3
	25AI504	Introduction to Cybersecurity - ITC (Industry Taught Courses)	SEC 02	2	0	0	2
	25CS505	Computer Networks Laboratory	PCC 15	0	0	2	1
	25UC110	Professional Ethics	HSS 07	3	0	0	3
	25CS505	Internship I / Industry Training (Summer Term) (2 weeks = 1 credits)[5]	PrSI 02	0	0	0	1
	25CBE05	Consciousness Based Education (CBE) – A5	HSS 08	0	0	0	0
	Total			17	0	4	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VI	25CS601	Database Management System	PCC 16	3	0	0	3
	25CS602	Machine Learning	PCC 17	3	0	2	4
	25CS603	Web Technologies	PCC 18	3	0	0	3
	-	Open Elective II	OEC 02	3	0	0	3
	25CS604A 25CS604B 25CS604C 25CS604D	Program Elective Course 3	PEC 03	3	0	0	3
	25CS605	Database Management System Laboratory	PCC 19	0	0	2	1
	25UC111	Soft Skills	HSS 09	2	0	2	3
	25CS606	Mini Project II (Industry/Societal Problem)	PrSI 03	0	0	2	1
	25UC112	Scientific Writing, Patents and Intellectual Property	HSS 10	0	0	4	2
	25CBE06	Consciousness Based Education (CBE) – A6	HSS 11	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	0	12	24/28

[5] Summer Internship in summer vacation (after 4th sem) will be evaluated in 5th sem.

Computer Science and Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VII	25CS701	Deep Learning and NLP	PCC 20	3	0	2	4
	25CS702A 25CS702B 25CS702C 25CS702D	Program Elective Course 4	PEC 04	3	0	0	3
	25CS703A 25CS703B 25CS703C 25CS703D	Program Elective Course 5	PEC 05	3	0	0	3
	-	Open Elective III	OEC 03	3	0	0	3
	25CS704	Industry Elective/ Research Elective / Entrepreneurship Elective	PEC 06	3	0	0	3
	25CS705	Colloquium/Seminar	PrSI 04	0	0	4	2
	25CS706	Internship II[6]	PrSI 05	8hrs/day four weeks=2			2
	25CS707	Mini Project III (Design + Prototype)	PrSI 06	0	0	4	2
	Total			15	0	10	22

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VIII	-	MOOC	OEC 04	0	0	0	2
	25CS801	Capstone Project (SDG/Industry Linked/Cross-disciplinary)	PrSI 07	0	0	24	12
	Total			0	0	24	14

[6] Students will do summer internship in summer vacation (after 6th sem) and evaluation for the same will be done in 7th semester.

Computer Science and Engineering

Category	Credits	Percentage of Credits %	Remarks
Humanities, Social Sciences & Management (HSMC)	17	11	Communication Skills, Ethics, Management, CBE
Basic Sciences (BSC)	18	9	Mathematics, Physics, Chemistry, Environmental Science
Engineering Sciences (ESC)	15	34	Programming, Graphics, Workshop, Electronics basics
Professional Core Course (PCC) (Lab Integrated courses - 9)	57	11	Discipline-specific courses
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Total	160	100	Fulfils AICTE and NEP 2020 requirements

Multiple Entry and Exit

UG	Program Level	Minimum Credit earned	Exit Equivalence forwarding degree	Entry–Requirement (UG 7 years – Credit Expiry)
UG I yr	5	40	UG - Certificate	1. 12th and JEE (through JoSAA/CSAB)
UG II yr	5	40	UG - Diploma	2. 12th and JEE (through JoSAA/CSAB) 3. 1st year UG- Certificate 4. Screening based on Branch Specific Prerequisite (Written test)
UG III Yr	7	44	B.Sc. Engineering	5. 12th and JEE Qualified 6. 2nd year UG- Diploma Certificate 7. Screening based on Branch. Specific Prerequisite (Written test)

Computer Science and Engineering

Minors = Additional 18 credits

Minor = Breadth (knowledge from another field).

Curriculum Components (Another field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation from another field	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Honors = Additional 18 credits

Honors = Depth (specialisation in own field).

Curriculum Components (Own field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Computer Science and Engineering (Artificial Intelligence)

Vision

To establish leadership in Artificial Intelligence by developing graduates capable of creating cognitive systems, advancing intelligent technologies, and addressing complex challenges through perception, reasoning, and automated decision-making.

Mission

M1: Core Intelligence and Reasoning
To impart strong foundations in knowledge representation, search techniques, and intelligent reasoning for building systems that emulate human cognitive abilities.

M2: Real-World AI Solutions
To facilitate practical exposure through interdisciplinary projects and collaborations that enable the creation of intelligent applications across diverse domains.

M3: Ethical and Adaptive Professionals
To develop responsible professionals with awareness of ethical implications, collaborative capabilities, and adaptability to emerging advancements in artificial intelligence.

Program Educational Objectives (PEOs)

PEO1: Cognitive System Development
Graduates will create AI-driven systems capable of perception, reasoning, and autonomous decision-making for complex environments.

PEO2: Technological Evolution
Graduates will engage with emerging advancements in artificial intelligence, contributing to research, innovation, and professional excellence.

PEO3: Responsible AI Contribution
Graduates will demonstrate ethical conduct, teamwork, and continuous learning while deploying intelligent solutions for societal benefit.

Program Outcomes (POs)

PO1: Engineering Knowledge Apply knowledge of mathematics, natural science, computing, and engineering fundamentals appropriate to the discipline to the solution of **complex engineering problems**.

PO2: Problem Analysis Identify, formulate, research literature, and analyse **complex engineering problems** reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/Development of Solutions Design solutions for **complex engineering problems** and design systems, components, or processes that meet specified needs with appropriate consideration for **public health and safety, whole-life cost, net zero carbon, culture, society, and environment**.

PO4: Investigation Conduct investigations of **complex engineering problems** using research-based knowledge and methods, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5: Modern Tool Usage Create, select, and apply appropriate techniques, resources, and **modern engineering and IT tools**, including prediction and modelling, to complex engineering problems, with an understanding of their limitations.

PO6: The Engineer and the World Analyse and evaluate **sustainable development impacts** to society, the economy, sustainability, health and safety, legal frameworks, and the environment in solving complex engineering problems.

PO7: Ethics Apply ethical principles and commit to professional ethics, responsibilities, and norms of engineering practice, including compliance with **national and international laws**. Demonstrate an understanding of the need for **diversity and inclusion**.

PO8: Individual and Collaborative Team Work Function effectively as an individual, and as a member or leader in **diverse and inclusive teams and in multidisciplinary, face-to-face, remote, and distributed settings**.

PO9: Communication Communicate effectively and inclusively on **complex engineering activities** with the engineering community and with society at large, including being able to comprehend and write effective reports and design documentation, and give and receive clear instructions.

PO10: Project Management and Finance Apply knowledge and understanding of engineering management principles and economic decision-making, and apply these to one's own work, as a member and leader in a team, to manage projects in **multidisciplinary environments**.

PO11: Life-long Learning **Recognise the need for, and have the preparation and ability for** independent and life-long learning**, adaptability to new and emerging technologies, and critical thinking in the broadest context of technological change.**

Program Specific Outcomes (PSOs)

PSO1: Knowledge Representation

Represent complex problems using knowledge models, ontologies, and symbolic reasoning techniques.

PSO2: Intelligent Decision Systems

Construct AI-based systems capable of perception, reasoning, and autonomous decision-making.

PSO3: Performance Enhancement

Refine intelligent systems by improving accuracy, efficiency, and reliability while considering ethical and societal aspects.

Correlation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
PEO1	3	3	3	2	3	1	–	–	–	–	2	3	2	2
PEO2	2	2	3	3	3	–	–	–	–	–	3	2	3	3
PEO3	–	–	1	–	1	3	3	3	2	2	3	1	1	3

CURRICULUM

Computer Science and Engineering (Artificial Intelligence)

	Course Code	Course Title	Category	L	T	P	C
SEMESTER I	25MA101	Linear Algebra, Calculus and Differential Equations	BSC 01	3	1	0	4
	25CH101	Engineering Chemistry	BSC 04	2	0	2	3
	25UC101	Programming for Problem Solving using C	ESC 01	3	0	2	4
	25HS101	English	HSS 01	2	0	2	3
	25UC103	Design Thinking and Idea Lab	ESC 03	2	0	2	3
	25CS101	Digital Logic Circuits	PCC 01	3	0	0	3
	-	Induction Programme (Non-credit)	MC 01	0	0	0	0
	25CBE01	Consciousness Based Education (CBE) – A1	HSS 02	0	0	0	0
	Total			15	1	8	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER II	25MA201	Integral Transforms and Multivariable Calculus	BSC 03	3	1	0	4
	25PH101	Semiconductor Physics	BSC 02	2	0	2	3
	25UC102	Engineering Systems	ESC 02	2	0	2	3
	25UC105	Sustainable Engineering	ESC 05	1	0	2	2
	25UC104	Engineering Drawing & Computer Graphics	ESC 04	2	0	2	3
	25CS201	Data Structures and Algorithms	PCC 02	3	0	0	3
	25CS202	Data Structures and Algorithms Laboratory	PCC 03	0	0	2	1
	25UC106	Sports & Yoga or NSS/NCC (Audit)	AC 01	0	0	2	0
	25CBE02	Consciousness Based Education (CBE) – A2	HSS 03	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			14	1	12	20/24

Computer Science and Engineering (Artificial Intelligence)

	Course Code	Course Title	Category	L	T	P	C
SEMESTER III	25MA303	Discrete Mathematics and Probability	BSC 07	3	1	0	4
	25AI301	Python Programming	PCC 04	2	0	2	3
	25CS302	Software Engineering	PCC 05	3	0	0	3
	25AM301	Distributed Operating Systems	PCC 06	2	0	2	3
	25AI302	Principles of Artificial Intelligence	PCC 07	3	0	0	3
	25AI303	Object Oriented Programming through C++	SEC 01	0	0	2	1
	25UC107	Environmental Science	AC 02	2	0	0	0
	25UC108	Universal Human Values – II	HSS 04	2	1	0	3
	25CBE03	Consciousness Based Education (CBE) – A3	HSS 05	0	0	0	0
	Total			17	2	6	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER IV	25AM401	Advanced Computer Architecture	PCC 08	3	1	0	4
	25AI401	Advanced Compiler Design	PCC 09	3	0	0	3
	25AI402	Machine Learning	PCC 10	3	0	0	3
	25CS404	Design and Analysis of Algorithms	PCC 11	3	0	2	4
	25AI403	Machine Learning Laboratory	PCC 12	0	0	2	1
	25UC109	Indian Knowledge System	AC 03	2	0	0	0
	25AI404A 25AI404B 25AI404C 25AI404D	Program Elective Course 1	PEC 01	3	0	0	3
	25AI405	Mini Project I (SDG Focus/ Multi-disciplinary)	PrSI 01	0	0	2	1
	25CBE04	Consciousness Based Education (CBE) – A4	HSS 06	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	1	6	20/24

Computer Science and Engineering (Artificial Intelligence)

	Course Code	Course Title	Category	L	T	P	C
SEMESTER V	25AI501	Natural Language Processing	PCC 13	3	0	2	4
	25AM502	Programming in Java	PCC 14	3	0	0	3
	25AI503A 25AI503B 25AI503C 25AI503D	Program Elective Course 2	PEC 02	3	0	0	3
	-	Open Elective I	OEC 01	3	0	0	3
	25AI504	Introduction to Quantum Computing - ITC (Industry Taught Courses)	SEC 02	2	0	0	2
	25AM504	Programming in Java for AI Systems Laboratory	PCC 15	0	0	2	1
	25UC110	Professional Ethics	HSS 07	3	0	0	3
	25CS505	Internship I / Industry Training (Summer Term) (2 weeks = 1 credits)[7]	PrSI 02	0	0	0	1
	25CBE05	Consciousness Based Education (CBE) – A5	HSS 08	0	0	0	0
	Total			17	0	4	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VI	25AI601	Cloud Computing for AI	PCC 16	3	0	0	3
	25AM601	Relational Database Management System	PCC 17	3	0	0	3
	25AI602	Full Stack AI Development	PCC 18	3	0	2	4
	-	Open Elective II	OEC 02	3	0	0	3
	25AI603A 25AI603B 25AI603C 25AI603D	Program Elective Course 3	PEC 03	3	0	0	3
	25AM604	Relational Database Management System Laboratory	PCC 19	0	0	2	1
	25UC111	Soft Skills	HSS 09	2	0	2	3
	25AI604	Mini Project II (Industry/Societal Problem)	PrSI 03	0	0	2	1
	25UC112	Scientific Writing, Patents and Intellectual Property	HSS 10	0	0	4	2
	25CBE06	Consciousness Based Education (CBE) – A6	HSS 11	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	0	12	24/28

[7] Summer Internship in summer vacation (after 4th sem) will be evaluated in 5th sem.

Computer Science and Engineering (Artificial Intelligence)

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VII	25AI701	Deep Learning	PCC 20	3	0	2	4
	25AI702A 25AI702B 25AI702C 25AI702D	Program Elective Course 4	PEC 04	3	0	0	3
	25AI703A 25AI703B 25AI703C 25AI703D	Program Elective Course 5	PEC 05	3	0	0	3
	-	Open Elective III	OEC 03	3	0	0	3
	25AI704	Industry Elective/ Research Elective / Entrepreneurship Elective	PEC 06	3	0	0	3
	25AI705	Colloquium/Seminar	PrSI 04	0	0	4	2
	25AI706	Internship II[8]	PrSI 05	8hrs/day four weeks=2			2
	25AI707	Mini Project III (Design + Prototype)	PrSI 06	0	0	4	2
	Total			15	0	10	22

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VIII	-	MOOC	OEC 04	0	0	0	2
	25AI801	Capstone Project (SDG/Industry Linked/Cross-disciplinary)	PrSI 07	0	0	24	12
	Total			0	0	24	14

[8] Students will do summer internship in summer vacation (after 6th sem) and evaluation for the same will be done in 7th semester.

Computer Science and Engineering (Artificial Intelligence)

Category	Credits	Percentage of Credits %	Remarks
Humanities, Social Sciences & Management (HSMC)	17	11	Communication Skills, Ethics, Management, CBE
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Computer Science and Engineering (Artificial Intelligence)

Minors = Additional 18 credits

Minor = Breadth (knowledge from another field).

Curriculum Components (Another field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation from another field	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Honors = Additional 18 credits

Honors = Depth (specialisation in own field).

Curriculum Components (Own field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Computer Science and Engineering (Data Science)

Vision

To emerge as a centre of excellence in Data Science by fostering innovation, advancing research, and producing globally competent professionals capable of deriving insights from data to solve complex societal and industrial challenges with ethical responsibility.

Mission

M1: Academic Excellence in Data Science
To provide high-quality education in data science through a contemporary curriculum that integrates mathematics, statistics, computing, and domain knowledge, fostering analytical thinking and problem-solving skills.

M2: Industry, Research and Innovation
To promote industry collaboration, experiential learning, and research in data analytics, artificial intelligence, and big data technologies to develop practical competence and innovative solutions.

M3: Ethics and Lifelong Learning
To inculcate professional ethics, teamwork, and lifelong learning to enable graduates to adapt to evolving technologies and contribute responsibly to society.

Program Educational Objectives (PEOs)

PEO1: Professional Competence
Graduates will excel in careers or higher education by applying data science principles, analytical techniques, and modern tools to solve complex real-world problems.

PEO2: Innovation and Adaptability
Graduates will demonstrate innovation, research capability, and adaptability to emerging technologies such as AI, machine learning, and big data analytics.

PEO3: Ethics and Lifelong Learning
Graduates will practice professional ethics, work effectively in multidisciplinary teams, and engage in lifelong learning to address societal and global challenges.

Program Outcomes (POs)

PO1: Engineering Knowledge Apply knowledge of mathematics, natural science, computing, and engineering fundamentals appropriate to the discipline to the solution of **complex engineering problems**.

PO2: Problem Analysis Identify, formulate, research literature, and analyse **complex engineering problems** reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/Development of Solutions Design solutions for **complex engineering problems** and design systems, components, or processes that meet specified needs with appropriate consideration for **public health and safety, whole-life cost, net zero carbon, culture, society, and environment**.

PO4: Investigation Conduct investigations of **complex engineering problems** using research-based knowledge and methods, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5: Modern Tool Usage Create, select, and apply appropriate techniques, resources, and **modern engineering and IT tools**, including prediction and modelling, to complex engineering problems, with an understanding of their limitations.

PO6: The Engineer and the World Analyse and evaluate **sustainable development impacts** to society, the economy, sustainability, health and safety, legal frameworks, and the environment in solving complex engineering problems.

PO7: Ethics Apply ethical principles and commit to professional ethics, responsibilities, and norms of engineering practice, including compliance with **national and international laws**. Demonstrate an understanding of the need for **diversity and inclusion**.

PO8: Individual and Collaborative Team Work Function effectively as an individual, and as a member or leader in **diverse and inclusive teams and in multidisciplinary, face-to-face, remote, and distributed settings**.

PO9: Communication Communicate effectively and inclusively on **complex engineering activities** with the engineering community and with society at large, including being able to comprehend and write effective reports and design documentation, and give and receive clear instructions.

PO10: Project Management and Finance Apply knowledge and understanding of engineering management principles and economic decision-making, and apply these to one's own work, as a member and leader in a team, to manage projects in **multidisciplinary environments**.

PO11: Life-long Learning Recognise the need for, and have the preparation and ability for **independent and life-long learning**, adaptability to new and emerging technologies, and critical thinking in the broadest context of technological change.

Program Specific Outcomes (PSOs)

PSO1: Data Analysis and Modelling

Analyse large and complex datasets using statistical methods, machine learning techniques, and data visualisation tools to derive meaningful insights.

PSO2: Intelligent Systems Development

Develop data-driven applications and intelligent systems using artificial intelligence, big data technologies, and cloud platforms.

PSO3: Professional Practice and Decision Making

Apply analytical thinking and modern tools to support data-driven decision-making while adhering to ethical standards and societal responsibilities.

Correlation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
PEO1	3	3	2	3	3	1	–	–	–	–	2	3	2	2
PEO2	2	2	3	3	3	–	–	–	–	–	3	2	3	2
PEO3	–	–	1	–	1	3	3	3	2	2	3	1	1	3

CURRICULUM

Computer Science and Engineering (Data Science)

	Course Code	Course Title	Category	L	T	P	C
SEMESTER I	25MA101	Linear Algebra, Calculus and Differential Equations	BSC 01	3	1	0	4
	25PH101	Semiconductor Physics	BSC 02	2	0	2	3
	25UC101	Programming for Problem Solving using C	ESC 01	3	0	2	4
	25UC102	Engineering Systems	ESC 02	2	0	2	3
	25UC104	Engineering Drawing and Computer Graphics	ESC 04	2	0	2	3
	25CS101	Digital Logic Circuits	PCC 01	3	0	0	3
	-	Induction Programme (Non-credit)	MC 01	0	0	0	0
	25CBE01	Consciousness Based Education (CBE) – A1	HSS 02	0	0	0	0
	Total			15	1	8	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER II	25MA201	Integral Transforms and Multivariable Calculus	BSC 03	3	1	0	4
	25CH101	Engineering Chemistry	BSC 04	2	0	2	3
	25UC103	Desing Thinking and Idea Lab	ESC 03	2	0	2	3
	25UC105	Sustainable Engineering	ESC 05	1	0	2	2
	25HS101	English	HSS 01	2	0	2	3
	25CS201	Data Structures and Algorithms	PCC 02	3	0	0	3
	25CS202	Data Structures and Algorithms Laboratory	PCC 03	0	0	2	1
	25UC106	Sports & Yoga or NSS/NCC (Audit)	AC 01	0	0	2	0
	25CBE02	Consciousness Based Education (CBE) – A2	HSS 03	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			14	1	12	20/24

Computer Science and Engineering (Data Science)

	Course Code	Course Title	Category	L	T	P	C
SEMESTER III	25MA303	Discrete Mathematics and Probability	BSC 07	3	1	0	4
	25DS301	Introduction to Data Science	PCC 04	2	0	2	3
	25CS302	Software Engineering	PCC 05	3	0	0	3
	25CS303	Operating Systems	PCC 06	2	0	2	3
	25CS304	Microprocessor and Microcontroller	PCC 07	3	0	0	3
	25CS305	Python for Data Science and Visualization	SEC 01	0	0	2	1
	25UC107	Environmental Science	AC 02	2	0	0	0
	25UC108	Universal Human Values – II	HSS 04	2	1	0	3
	25CBE03	Consciousness Based Education (CBE) – A3	HSS 05	0	0	0	0
	Total			17	2	6	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER IV	25DS401	Data Engineering	PCC 08	3	0	2	4
	25CS401	Computer Organization & Architecture	PCC 09	3	0	0	3
	25CS402	Theory of Computation	PCC 10	3	1	0	4
	25CS403	Java Programming	PCC 11	3	0	0	3
	25CS407	Java Programming Laboratory	PCC 12	0	0	2	1
	25UC109	Indian Knowledge System	AC 03	2	0	0	0
	25DS404A 25DS404B 25DS404C 25DS404D	Program Elective Course 1	PEC 01	3	0	0	3
	25DS404	Mini Project I (SDG Focus/ Multi-disciplinary)	PrSI 01	0	0	2	1
	25CBE04	Consciousness Based Education (CBE) – A4	HSS 06	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	1	6	20/24

Computer Science and Engineering (Data Science)

	Course Code	Course Title	Category	L	T	P	C
SEMESTER V	25DS501	Big Data Analytics	PCC 13	3	0	2	4
	25DS502	Machine Learning	PCC 14	3	0	0	3
	25DS503A 25DS503B 25DS503C 25DS503D	Program Elective Course 2	PEC 02	3	0	0	3
	-	Open Elective I	OEC 01	3	0	0	3
	25CS503	Introduction to Cybersecurity - ITC (Industry Taught Courses)	SEC 02	2	0	0	2
	25DS505	Machine Learning Laboratory	PCC 15	0	0	2	1
	25UC110	Professional Ethics	HSS 07	3	0	0	3
	25DS505	Internship I / Industry Training (Summer Term) (2 weeks = 1 credits)[9]	PrSI 02	0	0	0	1
	25CBE05	Consciousness Based Education (CBE) – A5	HSS 08	0	0	0	0
	Total			17	0	4	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VI	25DS601	Deep Learning	PCC 16	3	0	2	4
	25DS602	Natural Language Processing	PCC 17	3	0	0	3
	25CS601	Database Management System	PCC 18	3	0	0	3
	-	Open Elective II	OEC 02	3	0	0	3
	25DS603A 25DS603B 25DS603C 25DS603D	Program Elective Course 3	PEC 03	3	0	0	3
	25DS605	Database Management System Laboratory	PCC 19	0	0	2	1
	25UC111	Soft Skills	HSS 09	2	0	2	3
	25DS604	Mini Project II (Industry/Societal Problem)	PrSI 03	0	0	2	1
	25UC112	Scientific Writing, Patents and Intellectual Property	HSS 10	0	0	4	2
	25CS605	Consciousness Based Education (CBE) – A6	HSS 11	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	0	12	24/28

[9] Summer Internship in summer vacation (after 4th sem) will be evaluated in 5th sem.

Computer Science and Engineering (Data Science)

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VII	25DS701	Advanced Data Visualization	PCC 20	3	0	2	4
	25DS702A 25DS702B 25DS702C 25DS702D	Program Elective Course 4	PEC 04	3	0	0	3
	25DS703A 25DS703B 25DS703C 25DS703D	Program Elective Course 5	PEC 05	3	0	0	3
	-	Open Elective III	OEC 03	3	0	0	3
	25DS704	Industry Elective/ Research Elective / Entrepreneurship Elective	PEC 06	3	0	0	3
	25DS705	Colloquium/Seminar	PrSI 04	0	0	4	2
	25DS706	Internship II[10]	PrSI 05	8hrs/day four weeks=2			2
	25DS707	Mini Project III (Design + Prototype)	PrSI 06	0	0	4	2
	Total			15	0	10	22

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VIII	-	MOOC	OEC 04	0	0	0	2
	25DS801	Capstone Project (SDG/Industry Linked/Cross-disciplinary)	PrSI 07	0	0	24	12
	Total			0	0	24	14

[10] Students will do summer internship in summer vacation (after 6th sem) and evaluation for the same will be done in 7th semester.

Computer Science and Engineering (Data Science)

Category	Credits	Percentage of Credits %	Remarks
Humanities, Social Sciences & Management (HSMC)	17	11	Communication Skills, Ethics, Management, CBE
Basic Sciences (BSC)	18	9	Mathematics, Physics, Chemistry, Environmental Science
Engineering Sciences (ESC)	15	34	Programming, Graphics, Workshop, Electronics basics
Professional Core Course (PCC) (Lab Integrated courses - 9)	57	11	Discipline-specific courses
Program Elective (PEC)	18	7	Chosen from within the discipline
Open Electives (OEC)	11	11	Across departments
Project / Internship / Research / Entrepreneurship	21	5	Semester-long major project, internships, or startup work
Skill Enhancement Courses/Value Added Courses	3	11	Employability enhancement
Total	160	100	Fulfils AICTE and NEP 2020 requirements

Multiple Entry and Exit

UG	Program Level	Minimum Credit earned	Exit Equivalence forwarding degree	Entry–Requirement (UG 7 years – Credit Expiry)
UG I yr	5	40	UG - Certificate	1. 12th and JEE (through JoSAA/CSAB)
UG II yr	5	40	UG - Diploma	2. 12th and JEE (through JoSAA/CSAB) 3. 1st year UG- Certificate 4. Screening based on Branch Specific Prerequisite (Written test)
UG III Yr	7	44	B.Sc. Engineering	5. 12th and JEE Qualified 6. 2nd year UG- Diploma Certificate 7. Screening based on Branch. Specific Prerequisite (Written test)

Computer Science and Engineering (Data Science)

Minors = Additional 18 credits

Minor = Breadth (knowledge from another field).

Curriculum Components (Another field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation from another field	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Honors = Additional 18 credits

Honors = Depth (specialisation in own field).

Curriculum Components (Own field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Computer Science and Engineering (Artificial Intelligence and Machine Learning)

Vision

To be a leading centre for AI and Machine Learning education, enabling graduates to engineer intelligent learning systems, innovate adaptive technologies, and contribute to solving complex real-world problems through data-driven intelligence.

Mission

M1: Foundations in Learning Systems
To build strong competencies in machine learning algorithms, statistical reasoning, and computational intelligence for developing systems that learn from data.

M2: Applied Machine Learning Engineering
To promote hands-on learning through real-world problem solving, model development, and system deployment using contemporary AI and ML frameworks.

M3: Responsible AI and Continuous Growth
To nurture responsible AI practitioners with ethical awareness, collaborative skills, and a commitment to continuous upskilling in evolving intelligent technologies.

Program Educational Objectives (PEOs)

PEO1: Learning System Engineering
Graduates will design and implement machine learning models and intelligent systems to address complex challenges in industry and research.

PEO2: Technological Advancement
Graduates will adapt to emerging trends in artificial intelligence and machine learning, contributing to innovation, research, and professional growth.

PEO3: Responsible AI Practice
Graduates will demonstrate ethical responsibility, teamwork, and continuous learning while developing AI-driven solutions for societal benefit.

Program Outcomes (POs)

PO1: Engineering Knowledge Apply knowledge of mathematics, natural science, computing, and engineering fundamentals appropriate to the discipline to the solution of **complex engineering problems**.

PO2: Problem Analysis Identify, formulate, research literature, and analyse **complex engineering problems** reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/Development of Solutions Design solutions for **complex engineering problems** and design systems, components, or processes that meet specified needs with appropriate consideration for **public health and safety, whole-life cost, net zero carbon, culture, society, and environment**.

PO4: Investigation Conduct investigations of **complex engineering problems** using research-based knowledge and methods, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5: Modern Tool Usage Create, select, and apply appropriate techniques, resources, and **modern engineering and IT tools**, including prediction and modelling, to complex engineering problems, with an understanding of their limitations.

PO6: The Engineer and the World Analyse and evaluate **sustainable development impacts** to society, the economy, sustainability, health and safety, legal frameworks, and the environment in solving complex engineering problems.

PO7: Ethics Apply ethical principles and commit to professional ethics, responsibilities, and norms of engineering practice, including compliance with **national and international laws**. Demonstrate an understanding of the need for **diversity and inclusion**.

PO8: Individual and Collaborative Team Work Function effectively as an individual, and as a member or leader in **diverse and inclusive teams and in multidisciplinary, face-to-face, remote, and distributed settings**.

PO9: Communication Communicate effectively and inclusively on **complex engineering activities** with the engineering community and with society at large, including being able to comprehend and write effective reports and design documentation, and give and receive clear instructions.

PO10: Project Management and Finance Apply knowledge and understanding of engineering management principles and economic decision-making, and apply these to one's own work, as a member and leader in a team, to manage projects in **multidisciplinary environments**.

PO11: Life-long Learning **Recognise the need for, and have the preparation and ability for** independent and life-long learning**, adaptability to new and emerging technologies, and critical thinking in the broadest context of technological change.**

Program Specific Outcomes (PSOs)

PSO1: Learning Models

Formulate machine learning models using supervised, unsupervised, and reinforcement learning techniques for predictive and adaptive applications.

PSO2: Intelligent Implementation

Implement AI and ML algorithms using modern frameworks to build scalable and efficient intelligent systems.

PSO3: Model Evaluation and Optimisation

aw learning models by evaluating performance, tuning parameters, and improving accuracy, reliability, and fairness.

Correlation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
PEO1	3	3	3	2	3	1	–	–	–	–	2	3	2	2
PEO2	2	2	3	3	3	–	–	–	–	–	3	2	3	3
PEO3	–	–	1	–	1	3	3	3	2	2	3	1	1	3

CURRICULUM

Computer Science and Engineering (Artificial Intelligence and Machine Learning)

	Course Code	Course Title	Category	L	T	P	C
SEMESTER I	25MA101	Linear Algebra, Calculus and Differential Equations	BSC 01	3	1	0	4
	25PH101	Semiconductor Physics	BSC 02	2	0	2	3
	25UC101	Programming for Problem Solving using C	ESC 01	3	0	2	4
	25UC102	Engineering Systems	ESC 02	2	0	2	3
	25UC104	Engineering Drawing and Computer Graphics	ESC 04	2	0	2	3
	25CS101	Digital Logic Circuits	PCC 01	3	0	0	3
	-	Induction Programme (Non-credit)	MC 01	0	0	0	0
	25CBE01	Consciousness Based Education (CBE) – A1	HSS 02	0	0	0	0
	Total			15	1	8	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER II	25MA201	Integral Transforms and Multivariable Calculus	BSC 03	3	1	0	4
	25CH101	Engineering Chemistry	BSC 04	2	0	2	3
	25UC103	Desing Thinking and Idea Lab	ESC 03	2	0	2	3
	25UC105	Sustainable Engineering	ESC 05	1	0	2	2
	25HS101	English	HSS 01	2	0	2	3
	25CS201	Data Structures and Algorithms	PCC 02	3	0	0	3
	25CS202	Data Structures and Algorithms Laboratory	PCC 03	0	0	2	1
	25UC106	Sports & Yoga or NSS/NCC (Audit)	AC 01	0	0	2	0
	25CBE02	Consciousness Based Education (CBE) – A2	HSS 03	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			14	1	12	20/24

Computer Science and Engineering (Artificial Intelligence and Machine Learning)

	Course Code	Course Title	Category	L	T	P	C
SEMESTER III	25MA303	Discrete Mathematics and Probability	BSC 07	3	1	0	4
	25AI301	Python Programming	PCC 04	2	0	2	3
	25CS302	Software Engineering	PCC 05	3	0	0	3
	25AM301	Distributed Operating Systems	PCC 06	2	0	2	3
	25AI302	Principles of Artificial Intelligence	PCC 07	3	0	0	3
	25AI303	Object Oriented Programming through C++	SEC 01	0	0	2	1
	25UC107	Environmental Science	AC 02	2	0	0	0
	25UC108	Universal Human Values – II	HSS 04	2	1	0	3
	25CBE03	Consciousness Based Education (CBE) – A3	HSS 05	0	0	0	0
	Total			17	2	6	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER IV	25AM401	Advanced Computer Architecture	PCC 08	3	1	0	4
	25AI401	Advanced Compiler Design	PCC 09	3	0	0	3
	25AI402	Machine Learning	PCC 10	3	0	0	3
	25CS404	Design and Analysis of Algorithms	PCC 11	3	0	2	4
	25AI403	Machine Learning Laboratory	PCC 12	0	0	2	1
	25UC109	Indian Knowledge System	AC 03	2	0	0	0
	25AM402A 25AM402B 25AI404A 25AI404D	Program Elective Course 1	PEC 01	3	0	0	3
	25AM403	Mini Project I (SDG Focus/ Multi-disciplinary)	PrSI 01	0	0	2	1
	25CBE04	Consciousness Based Education (CBE) – A4	HSS 06	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	1	6	20/24

Computer Science and Engineering (Artificial Intelligence and Machine Learning)

	Course Code	Course Title	Category	L	T	P	C
SEMESTER V	25AM501	Principles of Natural Language Processing	PCC 13	3	0	2	4
	25AM502	Programming in Java	PCC 14	3	0	0	3
	25AM503A 25AM503B 25AI503B 25AI503C	Program Elective Course 2	PEC 02	3	0	0	3
	-	Open Elective I	OEC 01	3	0	0	3
	25AI504	Introduction to Quantum Computing - ITC (Industry Taught Courses)	SEC 02	2	0	0	2
	25AM504	Programming in Java for AI Systems Laboratory	PCC 15	0	0	2	1
	25UC110	Professional Ethics	HSS 07	3	0	0	3
	25AM505	Internship I / Industry Training (Summer Term) (2 weeks = 1 credits)[11]	PrSI 02	0	0	0	1
	25CBE05	Consciousness Based Education (CBE) – A5	HSS 08	0	0	0	0
	Total			17	0	4	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VI	25AI601	Cloud Computing for AI	PCC 16	3	0	0	3
	25AM601	Relational Database Management System	PCC 17	3	0	0	3
	25AM602	Machine Learning for Cybersecurity	PCC 18	3	0	0	3
	-	Open Elective II	OEC 02	3	0	2	4
	25AM603A 25AM603B 25AI604B 25AI604D	Program Elective Course 3	PEC 03	3	0	0	3
	25AM604	Relational Database Management System Laboratory	PCC 19	0	0	2	1
	25UC111	Soft Skills	HSS 09	2	0	2	3
	25AM604	Mini Project II (Industry/Societal Problem)	PrSI 03	0	0	2	1
	25UC112	Scientific Writing, Patents and Intellectual Property	HSS 10	0	0	4	2
	25CBE06	Consciousness Based Education (CBE) – A6	HSS 11	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	0	12	24/28

[11] Summer Internship in summer vacation (after 4th sem) will be evaluated in 5th sem.

Computer Science and Engineering (Artificial Intelligence and Machine Learning)

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VII	25AI701	Deep Learning	PCC 20	3	0	2	4
	25AI702A 25AI702B 25AM702A 25AI702D	Program Elective Course 4	PEC 04	3	0	0	3
	25AM703A 25AI703B 25AI703C 25AI703D	Program Elective Course 5	PEC 05	3	0	0	3
	-	Open Elective III	OEC 03	3	0	0	3
	25AM703	Industry Elective/ Research Elective / Entrepreneurship Elective	PEC 06	3	0	0	3
	25AM704	Colloquium/Seminar	PrSI 04	0	0	4	2
	25AM705	Internship II[12]	PrSI 05	8hrs/day four weeks=2			2
	25AM706	Mini Project III (Design + Prototype)	PrSI 06	0	0	4	2
	Total			15	0	10	22

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VIII	-	MOOC	OEC 04	0	0	0	2
	25AM801	Capstone Project (SDG/Industry Linked/Cross-disciplinary)	PrSI 07	0	0	24	12
	Total			0	0	24	14

[12] Students will do summer internship in summer vacation (after 6th sem) and evaluation for the same will be done in 7th semester.

Computer Science and Engineering (Artificial Intelligence and Machine Learning)

Category	Credits	Percentage of Credits %	Remarks
Humanities, Social Sciences & Management (HSMC)	17	11	Communication Skills, Ethics, Management, CBE
Basic Sciences (BSC)	18	9	Mathematics, Physics, Chemistry, Environmental Science
Engineering Sciences (ESC)	15	34	Programming, Graphics, Workshop, Electronics basics
Professional Core Course (PCC) (Lab Integrated courses - 9)	57	11	Discipline-specific courses
Program Elective (PEC)	18	7	Chosen from within the discipline
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Project / Internship / Research / Entrepreneurship	21	5	Semester-long major project, internships, or startup work
Skill Enhancement Courses/Value Added Courses	3	11	Employability enhancement
Total	160	100	Fulfils AICTE and NEP 2020 requirements

Multiple Entry and Exit

UG	Program Level	Minimum Credit earned	Exit Equivalence forwarding degree	Entry–Requirement (UG 7 years – Credit Expiry)
UG I yr	5	40	UG - Certificate	1. 12th and JEE (through JoSAA/CSAB)
UG II yr	5	40	UG - Diploma	2. 12th and JEE (through JoSAA/CSAB) 3. 1st year UG- Certificate 4. Screening based on Branch Specific Prerequisite (Written test)
UG III Yr	7	44	B.Sc. Engineering	5. 12th and JEE Qualified 6. 2nd year UG- Diploma Certificate 7. Screening based on Branch. Specific Prerequisite (Written test)

Computer Science and Engineering (Artificial Intelligence and Machine Learning)

Minors = Additional 18 credits

Minor = Breadth (knowledge from another field).

Curriculum Components (Another field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation from another field	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Honors = Additional 18 credits

Honors = Depth (specialisation in own field).

Curriculum Components (Own field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Electrical and Electronics Engineering

Vision

To attain prominence in electrical and electronics engineering by preparing graduates to advance energy systems, intelligent electrical infrastructure, and sustainable technologies for global progress.

Mission

M1: Core Electrical Competence

To build strong expertise in electrical circuits, energy conversion, control systems, and electronic devices, enabling graduates to address engineering challenges with analytical rigor.

M2: Industrial Relevance and Technological Advancement

To encourage practical exposure through laboratory work, field applications, and professional engagement in areas such as power systems, automation, and renewable energy.

M3: Professional Responsibility and Continuous Growth

To develop engineers with integrity, collaborative mindset, and the capacity for continuous professional development in response to evolving technological landscapes.

Program Educational Objectives (PEOs)

PEO1: Engineering Practice

Graduates will contribute effectively in electrical and electronics engineering domains by applying engineering principles to design, operate, and maintain electrical systems.

PEO2: Advancement and Specialisation

Graduates will pursue advanced studies, research, or professional practice in emerging areas such as smart grids, electric mobility, and energy management.

PEO3: Ethical and Societal Engagement

Graduates will demonstrate professional responsibility, teamwork, and commitment to sustainable and safe engineering practices in societal contexts.

Program Outcomes (POs)

PO1: Engineering Knowledge Apply knowledge of mathematics, natural science, computing, and engineering fundamentals appropriate to the discipline to the solution of **complex engineering problems**.

PO2: Problem Analysis Identify, formulate, research literature, and analyse **complex engineering problems** reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/Development of Solutions Design solutions for **complex engineering problems** and design systems, components, or processes that meet specified needs with appropriate consideration for **public health and safety, whole-life cost, net zero carbon, culture, society, and environment**.

PO4: Investigation Conduct investigations of **complex engineering problems** using research-based knowledge and methods, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5: Modern Tool Usage Create, select, and apply appropriate techniques, resources, and **modern engineering and IT tools**, including prediction and modelling, to complex engineering problems, with an understanding of their limitations.

PO6: The Engineer and the World Analyse and evaluate **sustainable development impacts** to society, the economy, sustainability, health and safety, legal frameworks, and the environment in solving complex engineering problems.

PO7: Ethics Apply ethical principles and commit to professional ethics, responsibilities, and norms of engineering practice, including compliance with **national and international laws**. Demonstrate an understanding of the need for **diversity and inclusion**.

PO8: Individual and Collaborative Team Work Function effectively as an individual, and as a member or leader in **diverse and inclusive teams and in multidisciplinary, face-to-face, remote, and distributed settings**.

PO9: Communication Communicate effectively and inclusively on **complex engineering activities** with the engineering community and with society at large, including being able to comprehend and write effective reports and design documentation, and give and receive clear instructions.

PO10: Project Management and Finance Apply knowledge and understanding of engineering management principles and economic decision-making, and apply these to one's own work, as a member and leader in a team, to manage projects in **multidisciplinary environments**.

PO11: Life-long Learning **Recognise the need for, and have the preparation and ability for** independent and life-long learning**, adaptability to new and emerging technologies, and critical thinking in the broadest context of technological change.**

Program Specific Outcomes (PSOs)

PSO1: Electrical System Analysis

Evaluate electrical networks, machines, and power systems using analytical and computational methods to ensure reliable operation.

PSO2: Energy and Control Applications

Develop solutions in power electronics, control systems, and renewable energy technologies for efficient energy utilization.

PSO3: Engineering Practice and Safety

Implement electrical and electronic systems with adherence to standards, safety norms, and sustainability considerations.

Correlation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
PEO1	3	3	3	2	3	2	1	–	–	–	2	3	2	1
PEO2	2	2	3	3	3	1	–	–	–	–	3	2	3	2
PEO3	–	–	1	–	1	3	3	3	2	2	3	1	2	3

CURRICULUM

Electrical and Electronics Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER I	25MA101	Linear Algebra, Calculus and Differential Equations	BSC 01	3	1	0	4
	25PH101	Semiconductor Physics	BSC 02	2	0	2	3
	25UC101	Programming for Problem Solving using C	ESC 01	3	0	2	4
	25UC102	Engineering Systems	ESC 02	2	0	2	3
	25UC104	Engineering Drawing and Computer Graphics	ESC 04	3	0	0	3
	25EE101	Electrical Circuit Analysis-I	PCC 01	3	0	0	3
	-	Induction Programme (Non-credit)	MC 01	0	0	0	0
	25CBE01	Consciousness Based Education (CBE) – A1	HSS 02	0	0	0	0
	Total			16	1	6	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER II	25MA201	Integral Transforms and Multivariable Calculus	BSC 03	3	1	0	4
	25CH101	Engineering Chemistry	BSC 04	2	0	2	3
	25UC103	Desing Thinking and Idea Lab	ESC 03	2	0	2	3
	25UC105	Sustainable Engineering	ESC 05	1	0	2	2
	25HS101	English	HSS 01	2	0	2	3
	25EE201	Electrical Circuit Analysis-II	PCC 02	3	0	2	4
	25UC106	Sports & Yoga or NSS/NCC (Audit)	AC 01	0	0	2	0
	25CBE02	Consciousness Based Education (CBE) – A2	HSS 03	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			14	1	12	20/24

Electrical and Electronics Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER III	25MA302	Complex Variables and Numerical Methods	BSC 06	3	1	0	4
	25EE301	Electromagnetic field theory	PCC 03	2	0	2	3
	25EE302	DC Machines & Transformers	PCC 04	3	0	0	3
	25EE303	Power Systems - I	PCC 05	2	0	2	3
	25EE304	Signals and Systems	PCC 06	3	0	0	3
	25EE305	Basics of Python Programming	SEC 01	0	0	2	1
	25UC107	Environmental Science	AC 02	2	0	0	0
	25UC108	Universal Human Values – II	HSS 04	2	1	0	3
	25CBE03	Consciousness Based Education (CBE) – A3	HSS 05	0	0	0	0
	Total			17	2	6	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER IV	25EE401	Signals and systems	PCC 07	3	0	0	3
	25EE402	Digital Circuits	PCC 08	3	0	2	4
	25EE403	Induction and Synchronous machines	PCC 09	3	0	2	4
	25EE404	Power Systems -II	PCC 10	3	0	2	4
	25UC109	Indian Knowledge System	AC 03	2	0	0	0
	25EE405A 25EE405B 25EE405C 25EE405D	Program Elective Course 1	PEC 01	3	0	0	3
	25EE406	Mini Project I (SDG Focus/ Multi-disciplinary)	PrSI 01	0	0	2	1
	25CBE04	Consciousness Based Education (CBE) – A4	HSS 06	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	0	8	20/24

Electrical and Electronics Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER V	25EE501	Power Electronics	PCC 11	3	0	2	4
	25EE502	Control Systems	PCC 12	3	0	2	4
	25EE503A 25EE503B 25EE503C 25EE503D	Program Elective Course 2	PEC 02	3	0	0	3
	-	Open Elective I	OEC 01	3	0	0	3
	25AI504	Introduction to Quantum Computing	SEC 02	2	0	0	2
	25UC110	Professional Ethics	HSS 07	3	0	0	3
	25EE504	Internship I / Industry Training (Summer Term) (2 weeks = 1 credits)[13]	PrSI 02	0	0	2	1
	25CBE05	Consciousness Based Education (CBE) – A5	HSS 08	0	0	0	0
	Total			17	0	6	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VI	25EE601	Electrical Measurements and Instrumentation	PCC 13	3	0	2	4
	25EE602	Microprocessors and Microcontrollers	PCC 14	3	0	2	4
	25EE603	Power System Analysis	PCC15	3	0	0	3
	-	Open Elective II	OEC 02	3	0	0	3
	25EE604A 25EE604B 25EE604C 25EE604D	Program Elective Course 3	PEC 03	3	0	0	3
	25UC111	Soft Skills	HSS 09	2	0	2	3
	25EE605	Mini Project II (Industry/Societal Problem)	PrSI 03	0	0	2	1
	25UC112	Scientific Writing, Patents and Intellectual Property	HSS 10	0	0	4	2
	25CBE06	Consciousness Based Education (CBE) – A6	HSS 11	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	0	12	24/28

[13] Summer Internship in summer vacation (after 4th sem) will be evaluated in 5th sem.

Electrical and Electronics Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VII	25EE701	Power System Operation and Control	PCC 16	3	0	2	4
	25EE702A 25EE702B 25EE702C 25EE702D	Program Elective Course 4	PEC 04	3	0	0	3
	25EE703A 25EE703B 25EE703C 25EE703D	Program Elective Course 5	PEC 05	3	0	0	3
	-	Open Elective III	OEC 03	3	0	0	3
	25EE704	Industry Elective/ Research Elective / Entrepreneurship Elective	PEC 06	3	0	0	3
	25EE705	Colloquium/Seminar	PrSI 04	0	0	4	2
	25EE706	Internship II[14]	PrSI 05	8hrs/day four weeks=2			2
	25EE707	Mini Project III (Design + Prototype)	PrSI 06	0	0	4	2
	Total			15	0	10	22

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VIII	-	MOOC	OEC 04	0	0	0	2
	25EE801	Capstone Project (SDG/Industry Linked/Cross-disciplinary)	PrSI 07	0	0	24	12
	Total			0	0	24	14

[14] Students will do summer internship in summer vacation (after 6th sem) and evaluation for the same will be done in 7th semester.

Electrical and Electronics Engineering

Category	Credits	Percentage of Credits %	Remarks
Humanities, Social Sciences & Management (HSMC)	17	11	Communication Skills, Ethics, Management, CBE
Basic Sciences (BSC)	18	9	Mathematics, Physics, Chemistry, Environmental Science
Engineering Sciences (ESC)	15	34	Programming, Graphics, Workshop, Electronics basics
Professional Core Course (PCC) (Lab Integrated courses)	57	11	Discipline-specific courses
Program Elective (PEC)	18	7	Chosen from within the discipline
Open Electives (OEC)	11	11	Across departments
Project / Internship / Research / Entrepreneurship	21	5	Semester-long major project, internships, or startup work
Skill Enhancement Courses/Value Added Courses	3	11	Employability enhancement
Total	160	100	Fulfils AICTE and NEP 2020 requirements

Multiple Entry and Exit

UG	Program Level	Minimum Credit earned	Exit Equivalence forwarding degree	Entry–Requirement (UG 7 years – Credit Expiry)
UG I yr	5	40	UG - Certificate	1. 12th and JEE (through JoSAA/CSAB)
UG II yr	5	40	UG - Diploma	2. 12th and JEE (through JoSAA/CSAB) 3. 1st year UG- Certificate 4. Screening based on Branch Specific Prerequisite (Written test)
UG III Yr	7	44	B.Sc. Engineering	5. 12th and JEE Qualified 6. 2nd year UG- Diploma Certificate 7. Screening based on Branch. Specific Prerequisite (Written test)

Electrical and Electronics Engineering

Minors = Additional 18 credits

Minor = Breadth (knowledge from another field).

Curriculum Components (Another field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation from another field	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Honors = Additional 18 credits

Honors = Depth (specialisation in own field).

Curriculum Components (Own field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Electronics and Communication Engineering

Vision

To establish distinction in electronics and communication engineering by nurturing graduates capable of advancing electronic systems, communication networks, and signal-driven technologies for a connected and technology-driven world.

Mission

M1: Foundations in Electronic and Communication Systems
To develop proficiency in electronic circuits, signal processing, communication techniques, and embedded platforms for addressing engineering challenges with technical depth.

M2: Technological Practice and Innovation
To encourage application-oriented learning through experimentation, system realisation, and collaboration in areas such as wireless communication, VLSI, and intelligent electronic systems.

M3: Professional Integrity and Adaptability
To prepare graduates with ethical awareness, collaborative abilities, and readiness for continuous learning in rapidly evolving communication and electronic domains.

Program Educational Objectives (PEOs)

PEO1: Engineering Engagement
Graduates will contribute to electronics and communication domains by designing, analysing, and maintaining electronic and communication systems in professional practice.

PEO2: Advancement in Specialised Areas
Graduates will pursue higher studies, research, or professional careers in emerging fields such as wireless technologies, embedded systems, semiconductor design, and communication networks.

PEO3: Responsible Professional Practice
Graduates will exhibit integrity, teamwork, and commitment to safe, sustainable, and socially responsible engineering solutions.

Program Outcomes (POs)

PO1: Engineering Knowledge Apply knowledge of mathematics, natural science, computing, and engineering fundamentals appropriate to the discipline to the solution of **complex engineering problems**.

PO2: Problem Analysis Identify, formulate, research literature, and analyse **complex engineering problems** reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/Development of Solutions Design solutions for **complex engineering problems** and design systems, components, or processes that meet specified needs with appropriate consideration for **public health and safety, whole-life cost, net zero carbon, culture, society, and environment**.

PO4: Investigation Conduct investigations of **complex engineering problems** using research-based knowledge and methods, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5: Modern Tool Usage Create, select, and apply appropriate techniques, resources, and **modern engineering and IT tools**, including prediction and modelling, to complex engineering problems, with an understanding of their limitations.

PO6: The Engineer and the World Analyse and evaluate **sustainable development impacts** to society, the economy, sustainability, health and safety, legal frameworks, and the environment in solving complex engineering problems.

PO7: Ethics Apply ethical principles and commit to professional ethics, responsibilities, and norms of engineering practice, including compliance with **national and international laws**. Demonstrate an understanding of the need for **diversity and inclusion**.

PO8: Individual and Collaborative Team Work Function effectively as an individual, and as a member or leader in **diverse and inclusive teams and in multidisciplinary, face-to-face, remote, and distributed settings**.

PO9: Communication Communicate effectively and inclusively on **complex engineering activities** with the engineering community and with society at large, including being able to comprehend and write effective reports and design documentation, and give and receive clear instructions.

PO10: Project Management and Finance Apply knowledge and understanding of engineering management principles and economic decision-making, and apply these to one's own work, as a member and leader in a team, to manage projects in **multidisciplinary environments**.

PO11: Life-long Learning **Recognise the need for, and have the preparation and ability for** independent and life-long learning**, adaptability to new and emerging technologies, and critical thinking in the broadest context of technological change.**

Program Specific Outcomes (PSOs)

PSO1: Signal and System Interpretation

Interpret signals and system behaviour using principles of analogue, digital, and communication engineering.

PSO2: Electronic System Realisation

Construct electronic and communication systems using modern tools, embedded platforms, and hardware-software integration techniques.

PSO3: Network and Communication Solutions

Deploy communication and signal processing solutions considering performance, reliability, and regulatory standards.

Correlation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
PEO1	3	3	3	2	3	1	–	–	–	–	2	3	2	1
PEO2	2	2	3	3	3	–	–	–	–	–	3	2	3	2
PEO3	–	–	1	–	1	3	3	3	2	2	3	1	2	3

CURRICULUM

Electronics and Communication Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER I	25MA101	Linear Algebra, Calculus and Differential Equations	BSC 01	3	1	0	4
	25PH101	Semiconductor Physics	BSC 02	2	0	2	3
	25UC101	Programming for Problem Solving using C	ESC 01	3	0	2	4
	25UC102	Engineering Systems	ESC 02	2	0	2	3
	25UC104	Engineering Drawing and Computer Graphics	ESC 04	2	0	2	3
	25EE101	Electrical Circuit Analysis-I	PCC 01	2	0	2	3
	-	Induction Programme (Non-credit)	MC 01	0	0	0	0
	25CBE01	Consciousness Based Education (CBE) – A1	HSS 02	0	0	0	0
	Total			14	1	10	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER II	25MA201	Integral Transforms and Multivariable Calculus	BSC 03	3	1	0	4
	25CH101	Engineering Chemistry	BSC 04	2	0	2	3
	25UC103	Desing Thinking and Idea Lab	ESC 03	2	0	2	3
	25UC105	Sustainable Engineering	ESC 05	1	0	2	2
	25HS101	English	HSS 01	2	0	2	3
	25EC201	Electronic Devices and Circuits	PCC02	3	0	0	3
	25EC202	Electronic Devices and Circuits Lab	PCC03	0	0	2	1
	25UC106	Sports & Yoga or NSS/NCC (Audit)	AC 01	0	0	2	0
	25CBE02	Consciousness Based Education (CBE) – A2	HSS 03	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			14	1	12	20/24

Electronics and Communication Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER III	25MA302	Complex variables and Numerical methods	BSC 06	3	1	0	4
	25EC301	Signal, Systems & Stachostics Process	PCC 04	2	0	2	3
	25EC302	Digital Logic Design	PCC 05	3	0	0	3
	25EC303	Electronic Circuit Analysis	PCC 06	2	0	2	3
	25EC304	Electro Magnetic Theory	PCC 07	3	0	0	3
	25EC305	Machine Learning using Python	SEC 01	0	0	2	1
	25UC107	Environmental Science	AC 02	2	0	0	0
	25UC108	Universal Human Values – II	HSS 04	2	1	0	3
	25CBE03	Consciousness Based Education (CBE) – A3	HSS 05	0	0	0	0
	Total			17	2	6	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER IV	25EC401	Antenna and Wave Propagation	PCC 08	3	1	0	4
	25EC402	Analog and Digital Communication	PCC 09	3	0	0	3
	25EC403	Analog and Digital IC Applications	PCC 10	3	0	0	3
	25EC404	VLSI Design	PCC 11	3	0	0	3
	25EC406	Analog & Digital Communication Lab	PCC 12	0	0	2	1
	25EC407	Analog and Digital IC Applications lab	PCC 13	0	0	2	1
	25UC109	Indian Knowledge System	AC 03	2	0	0	0
	25EC405A 25EC405B 25EC405C 25EC405D	Program Elective Course 1	PEC 01	3	0	0	3
	25EC408	Mini Project I (SDG Focus/ Multi-disciplinary)	PrSI 01	0	0	2	1
	25CBE04	Consciousness Based Education (CBE) – A4	HSS 06	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	1	6	20/24

Electronics and Communication Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER V	25EC501	Microprocessors and Microcontroller	PCC 14	3	0	2	4
	25EC502	Digital Signal Processing	PCC 15	3	0	0	3
	25EC503A 25EC503B 25EC503C 25EC503D	Program Elective Course 2	PEC 02	3	0	0	3
	-	Open Elective I	OEC 01	3	0	0	3
	25AI504	Introduction to Quantum Computing - ITC (Industry Taught Courses)	SEC 02	2	0	0	2
	25EC504	Digital Signal Processing Lab	PCC 16	0	0	2	1
	25UC110	Professional Ethics	HSS 07	3	0	0	3
	25EC504	Internship I / Industry Training (Summer Term) (2 weeks = 1 credits)[15]	PrSI 02	0	0	2	1
	25CBE05	Consciousness Based Education (CBE) – A5	HSS 08	0	0	0	0
	Total			17	0	6	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VI	25EC601	Internet of Things	PCC 17	3	0	2	4
	25EC602	Micro Wave and Optical Communication	PCC 18	3	0	0	3
	25EC603	Digital Image Processing	PCC 19	3	0	0	3
	-	Open Elective II	OEC 02	3	0	0	3
	25EC604A 25EC604B 25EC604C 25EC604D	Program Elective Course 3	PEC 03	3	0	0	3
	25EC605	Micro Wave and Optical Communication Lab	PCC 20	0	0	2	1
	25UC111	Soft Skills	HSS 09	2	0	2	3
	25EC606	Mini Project II (Industry/Societal Problem)	PrSI 03	0	0	2	1
	25UC112	Scientific Writing, Patents and Intellectual Property	HSS 10	0	0	4	2
	25CBE06	Consciousness Based Education (CBE) – A6	HSS 11	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	0	12	24/28

[15] Summer Internship in summer vacation (after 4th sem) will be evaluated in 5th sem.

Electronics and Communication Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VII	25EC701	Satellite Communications	PCC 21	3	0	2	4
	25EC702A 25EC702B 25EC702C 25EC702B	Program Elective Course 4	PEC 04	3	0	0	3
	25EC703A 25EC703B 25EC703C 25EC703D	Program Elective Course 5	PEC 05	3	0	0	3
	-	Open Elective III	OEC 03	3	0	0	3
	25EC704	Industry Elective/ Research Elective / Entrepreneurship Elective	PEC 06	3	0	0	3
	25EC705	Colloquium/Seminar	PrSI 04	0	0	4	2
	25EC706	Internship II[16]	PrSI 05	8hrs/day four weeks=2			2
	25EC707	Mini Project III (Design + Prototype)	PrSI 06	0	0	4	2
	Total			15	0	10	22

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VIII	-	MOOC	OEC 04	0	0	0	2
	25EC801	Capstone Project (SDG/Industry Linked/Cross-disciplinary)	PrSI 07	0	0	24	12
	Total			0	0	24	14

[16] Students will do summer internship in summer vacation (after 6th sem) and evaluation for the same will be done in 7th semester.

Electronics and Communication Engineering

Category	Credits	Percentage of Credits %	Remarks
Humanities, Social Sciences & Management (HSMC)	17	11	Communication Skills, Ethics, Management, CBE
Basic Sciences (BSC)	18	9	Mathematics, Physics, Chemistry, Environmental Science
Engineering Sciences (ESC)	15	34	Programming, Graphics, Workshop, Electronics basics
Professional Core Course (PCC) (Lab Integrated courses - 9)	57	11	Discipline-specific courses
Program Elective (PEC)	18	7	Chosen from within the discipline
Open Electives (OEC)	11	11	Across departments
Project / Internship / Research / Entrepreneurship	21	5	Semester-long major project, internships, or startup work
Skill Enhancement Courses/Value Added Courses	3	11	Employability enhancement
Total	160	100	Fulfils AICTE and NEP 2020 requirements

Multiple Entry and Exit

UG	Program Level	Minimum Credit earned	Exit Equivalence forwarding degree	Entry–Requirement (UG 7 years – Credit Expiry)
UG I yr	5	40	UG - Certificate	1. 12th and JEE (through JoSAA/CSAB)
UG II yr	5	40	UG - Diploma	2. 12th and JEE (through JoSAA/CSAB) 3. 1st year UG- Certificate 4. Screening based on Branch Specific Prerequisite (Written test)
UG III Yr	7	44	B.Sc. Engineering	5. 12th and JEE Qualified 6. 2nd year UG- Diploma Certificate 7. Screening based on Branch. Specific Prerequisite (Written test)

Electronics and Communication Engineering

Minors = Additional 18 credits

Minor = Breadth (knowledge from another field).

Curriculum Components (Another field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation from another field	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Honors = Additional 18 credits

Honors = Depth (specialisation in own field).

Curriculum Components (Own field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Mechanical Engineering

Vision

To achieve excellence in mechanical engineering by developing professionals capable of advancing mechanical systems, manufacturing technologies, and energy solutions for sustainable industrial and societal progress.

Mission

M1: Engineering Fundamentals and System Understanding
To impart comprehensive knowledge in mechanics, thermal sciences, materials, and manufacturing processes to address engineering challenges with analytical and practical insight.

M2: Design, Production and Technological Advancement
To promote experiential learning through design, fabrication, and testing of mechanical systems, encouraging innovation in areas such as automation, energy systems, and advanced manufacturing.

M3: Professional Ethics and Continuous Development
To cultivate responsible engineers with integrity, teamwork, and adaptability to emerging technologies and evolving industrial practices.

Program Educational Objectives (PEOs)

PEO1: Engineering Practice
Graduates will contribute to mechanical engineering practice by designing, analysing, and improving mechanical and thermal systems in diverse industries.

PEO2: Advancement and Specialisation
Graduates will pursue higher studies, research, or professional careers in advanced domains such as energy systems, robotics, manufacturing, and sustainable technologies.

PEO3: Responsible and Collaborative Engagement
Graduates will demonstrate ethical conduct, teamwork, and commitment to safe and sustainable engineering solutions for societal benefit.

Program Outcomes (POs)

PO1: Engineering Knowledge Apply knowledge of mathematics, natural science, computing, and engineering fundamentals appropriate to the discipline to the solution of **complex engineering problems**.

PO2: Problem Analysis Identify, formulate, research literature, and analyse **complex engineering problems** reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/Development of Solutions Design solutions for **complex engineering problems** and design systems, components, or processes that meet specified needs with appropriate consideration for **public health and safety, whole-life cost, net zero carbon, culture, society, and environment**.

PO4: Investigation Conduct investigations of **complex engineering problems** using research-based knowledge and methods, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5: Modern Tool Usage Create, select, and apply appropriate techniques, resources, and **modern engineering and IT tools**, including prediction and modelling, to complex engineering problems, with an understanding of their limitations.

PO6: The Engineer and the World Analyse and evaluate **sustainable development impacts** to society, the economy, sustainability, health and safety, legal frameworks, and the environment in solving complex engineering problems.

PO7: Ethics Apply ethical principles and commit to professional ethics, responsibilities, and norms of engineering practice, including compliance with **national and international laws**. Demonstrate an understanding of the need for **diversity and inclusion**.

PO8: Individual and Collaborative Team Work Function effectively as an individual, and as a member or leader in **diverse and inclusive teams and in multidisciplinary, face-to-face, remote, and distributed settings**.

PO9: Communication Communicate effectively and inclusively on **complex engineering activities** with the engineering community and with society at large, including being able to comprehend and write effective reports and design documentation, and give and receive clear instructions.

PO10: Project Management and Finance Apply knowledge and understanding of engineering management principles and economic decision-making, and apply these to one's own work, as a member and leader in a team, to manage projects in **multidisciplinary environments**.

PO11: Life-long Learning **Recognise the need for, and have the preparation and ability for** independent and life-long learning**, adaptability to new and emerging technologies, and critical thinking in the broadest context of technological change.**

Program Specific Outcomes (PSOs)

PSO1: Mechanical System Evaluation

Evaluate mechanical components and systems using principles of mechanics, materials, and thermodynamics to ensure performance and reliability.

PSO2: Design and Manufacturing Solutions

Create mechanical designs and manufacturing solutions using modern tools, simulation techniques, and production methods.

PSO3: Energy and Sustainability Applications

Implement energy-efficient and sustainable practices in mechanical systems considering environmental and operational constraints.

Correlation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
PEO1	3	3	3	2	2	2	1	–	–	–	2	3	2	1
PEO2	2	2	3	3	2	1	–	–	–	–	3	2	3	2
PEO3	–	–	1	–	1	3	3	3	2	2	3	1	2	3

CURRICULUM

Mechanical Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER I	25MA101	Linear Algebra, Calculus and Differential Equations	BSC 01	3	1	0	4
	25PH101	Semiconductor Physics	BSC 02	2	0	2	3
	25UC101	Programming for Problem Solving using C	ESC 01	3	0	2	4
	25UC102	Engineering Systems	ESC 02	2	0	2	3
	25UC104	Engineering Drawing and Computer Graphics	ESC 04	2	0	2	3
	25ME101	Engineering Mechanics	PCC 01	3	0	0	3
	-	Induction Programme (Non-credit)	MC 01	0	0	0	0
	25CBE01	Consciousness Based Education (CBE) – A1	HSS 02	0	0	0	0
	Total			15	1	8	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER II	25MA201	Integral Transforms and Multivariable Calculus	BSC 03	3	1	0	4
	25CH101	Engineering Chemistry	BSC 04	2	0	2	3
	25UC103	Desing Thinking and Idea Lab	ESC 03	2	0	2	3
	25UC105	Sustainable Engineering	ESC 05	1	0	2	2
	25HS101	English	HSS 01	2	0	2	3
	25ME201	Material Science & Metallurgy	PCC02	3	0	0	3
	25ME202	Material Science & Metallurgy Laboratory	PCC03	0	0	2	1
	25UC106	Sports & Yoga or NSS/NCC (Audit)	AC 01	0	0	2	0
	25CBE02	Consciousness Based Education (CBE) – A2	HSS 03	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			14	1	12	20/24

Mechanical Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER III	25MA301	Transforms and Numerical Methods	BSC 05	3	1	0	4
	25ME301	Mechanics of Solids	PCC 04	2	0	2	3
	25ME302	Engineering Thermodynamics	PCC 05	3	0	0	3
	25ME303	Manufacturing processes	PCC 06	2	0	2	3
	25ME304	Sensors and Control Systems	PCC 07	3	0	0	3
	25EE305	Basics of Python Programming	SEC 01	0	0	2	1
	25UC107	Environmental Science	AC 02	2	0	0	0
	25UC108	Universal Human Values – II	HSS 04	2	1	0	3
	25CBE03	Consciousness Based Education (CBE) – A3	HSS 05	0	0	0	0
	Total			17	2	6	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER IV	25ME401	Kinematics of Machinery	PCC 08	3	0	0	3
	25ME402	Thermal Systems Engineering	PCC 09	3	0	2	4
	25ME403	Machine Tools	PCC 10	3	0	0	3
	25ME404	Fluid Mechanics and Hydraulic Machinery	PCC 11	3	0	2	4
	25ME405	Mechanical Modelling and Assembly	PCC 12	0	0	2	1
	25UC109	Indian Knowledge System	AC 03	2	0	0	0
	25ME405A 25ME405B 25ME405C 25ME405D	Program Elective Course 1	PEC 01	3	0	0	3
	25ME406	Mini Project I (SDG Focus/ Multi-disciplinary)	PrSI 01	0	0	2	1
	25CBE04	Consciousness Based Education (CBE) – A4	HSS 06	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs/day for 4 weeks				4
	Total			18	0	8	20/24

Mechanical Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER V	25ME501	Metrology and Measurements	PCC 13	3	0	2	4
	25ME502	Dynamics of Machinery	PCC 14	3	1	0	4
	25ME503A 25ME503B 25ME503C 25ME503D	Program Elective Course 2	PEC 02	3	0	0	3
	-	Open Elective I	OEC 01	3	0	0	3
	25AI504	Introduction to Quantum Computing - ITC (Industry Taught Courses)	SEC 02	2	0	0	2
	25UC110	Professional Ethics	HSS 07	3	0	0	3
	25EC504	Internship I / Industry Training (Summer Term) (2 weeks = 1 credits)[17]	PrSI 02	0	0	2	1
	25CBE05	Consciousness Based Education (CBE) – A5	HSS 08	0	0	0	0
	Total			17	1	4	20

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VI	25ME601	Heat and Mass Transfer	PCC 15	3	0	0	3
	25ME602	Finite Element Methods	PCC 16	3	0	2	4
	25ME603	Design of Mechanical Systems	PCC 17	3	0	0	3
	-	Open Elective II	OEC 02	3	0	0	3
	25ME604A 25ME604B 25ME604C 25ME604D	Program Elective Course 3	PEC 03	3	0	0	3
	25ME605	Heat and Mass Transfer Laboratory	PCC 18	0	0	2	1
	25UC111	Soft Skills	HSS 09	2	0	2	3
	25ME605	Mini Project II (Industry/Societal Problem)	PrSI 03	0	0	2	1
	25UC112	Scientific Writing, Patents and Intellectual Property	HSS 10	0	0	4	2
	25CBE06	Consciousness Based Education (CBE) – A6	HSS 11	1	0	0	1
	Vocational / Industrial Training /Laboratory Work/ Specialised course offered by respective department (Optional) Mandatory for exit with UG certificate		8 hrs /day for 4 weeks				4
	Total			18	0	12	24/28

[17] Summer Internship in summer vacation (after 4th sem) will be evaluated in 5th sem.

Mechanical Engineering

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VII	25ME701	Additive Manufacturing	PCC 19	3	0	2	4
	25ME702A 25ME702B 25ME702C 25ME702D	Program Elective Course 4	PEC 04	3	0	0	3
	25ME703A 25ME703B 25ME703C 25ME703D	Program Elective Course 5	PEC 05	3	0	0	3
	-	Open Elective III	OEC 03	3	0	0	3
	25ME704	Industry Elective/ Research Elective / Entrepreneurship Elective	PEC 06	3	0	0	3
	25ME705	Colloquium/Seminar	PrSI 04	0	0	4	2
	25ME706	Internship II/ Industry Training [18]	PrSI 05	8hrs/day four weeks=2			2
	25ME707	Mini Project III (Design + Prototype)	PrSI 06	0	0	4	2
	Total			15	0	10	22

	Course Code	Course Title	Category	L	T	P	C
SEMESTER VIII	-	MOOC	OEC 04	0	0	0	2
	25ME801	Capstone Project (SDG/Industry Linked/Cross-disciplinary)	PrSI 07	0	0	24	12
	Total			0	0	24	14

[18] Students will do summer internship in summer vacation (after 6th sem) and evaluation for the same will be done in 7th semester.

Mechanical Engineering

Category	Credits	Percentage of Credits %	Remarks
Humanities, Social Sciences & Management (HSMC)	17	11	Communication Skills, Ethics, Management, CBE
Basic Sciences (BSC)	18	9	Mathematics, Physics, Chemistry, Environmental Science
Engineering Sciences (ESC)	15	34	Programming, Graphics, Workshop, Electronics basics
Professional Core Course (PCC) (Lab Integrated courses - 9)	57	11	Discipline-specific courses
Program Elective (PEC)	18	7	Chosen from within the discipline
Open Electives (OEC)	11	11	Across departments
Project / Internship / Research / Entrepreneurship	21	5	Semester-long major project, internships, or startup work
Skill Enhancement Courses/Value Added Courses	3	11	Employability enhancement
Total	160	100	Fulfils AICTE and NEP 2020 requirements

Multiple Entry and Exit

UG	Program Level	Minimum Credit earned	Exit Equivalence forwarding degree	Entry–Requirement (UG 7 years – Credit Expiry)
UG I yr	5	40	UG - Certificate	1. 12th and JEE (through JoSAA/CSAB)
UG II yr	5	40	UG - Diploma	2. 12th and JEE (through JoSAA/CSAB) 3. 1st year UG- Certificate 4. Screening based on Branch Specific Prerequisite (Written test)
UG III Yr	7	44	B.Sc. Engineering	5. 12th and JEE Qualified 6. 2nd year UG- Diploma Certificate 7. Screening based on Branch. Specific Prerequisite (Written test)

Mechanical Engineering

Minors = Additional 18 credits

Minor = Breadth (knowledge from another field).

Curriculum Components (Another field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation from another field	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

Honors = Additional 18 credits

Honors = Depth (specialisation in own field).

Curriculum Components (Own field)		
S.No.	**Curriculum Component**	**Credits**
1.	Theory and Lab Courses	5
2.	Project – Specialisation	6
3.	Online Courses	3
4.	Certification Programs	4
	Total	18

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